


Abstract
Hb and PCV values were studied in three groups of Addis Ababa women during their last month of pregnancy and compared with those in a control group of non-pregnant Addis Ababa women. Irrespective of socio-economic group and party, the Hb and PCV values were almost identical in all four groups.
In one of the three test groups, a group of ‘non-privileged’ multiparae, S-iron, S-trans-ferrin (TIBC), S-florate and S-vitamin B\(_{12}\) were also examined and showed normal values.
These findings indicate a rarity not only of true anaemia but also of ‘physiological anaemia of pregnancy. This latter may not, therefore’ be an adaptive phenomenon of regular occurrence has usually been assumed hitherto. The explanation for the aberrant haematological behavior in pregnant women living in highland Ethiopia is probably is the lifelong exposure to a very high iron intake combined with hypoxia due to the high altitude.

Key words: Anaemia, Pregnancy, Ethiopia, Iron load


http://www.ajcn.org/content/29/4/441

Abstract
The vitamin A and beta-carotene contents of breast milk were determined at different stages of lactation in three population groups: non privileged Ethiopian, privileged Ethiopian and Swedish mothers. In addition, a fractionation of vitamin A giving the proportion of retinol was performed. The concentrations of retinol-binding protein (RBP) and (in part of the material) beta-carotene and prealbumin in plasma were also measured. The mean concentrations of vitamin A and beta-carotene in the milk from the Swedish mothers (period 0.5 to 6.5 months) were in the range of 40.0 to 53.1 and 16.3 to 20.8 mug/100 ml, respectively. For the privileged Ethiopian mothers (period 0.5 to 3.5 months) the corresponding ranges were 36.2 to 36.4 and 26.2 to 28.1 mug/100 ml and for the non privileged Ethiopian mothers (period 0.5 to 6.5 months) 28.1 to 33.1 and 23.9 to 25.6
mug/100 ml. Only the non privileged Ethiopian mothers were examined during a later stage of lactation (6.5 to 11.5 and 11.5 to 23.5 months). The concentrations of vitamin A and beta-carotene in their milk showed a downward trend. The proportion of retinyl ester (percentage of total vitamin A content) was significantly higher in the milk of Swedish mothers than in privileged and non privileged Ethiopian mothers. In the Swedish mothers retinol constituted 3.5% of the total vitamin A content of the milk; in Ethiopian mothers it was 15 to 30%. Determination of RBP in plasma showed normal values for Swedish mothers and lowered values for Ethiopian mothers--particularly the non privileged, in whom 14 of 81 values were below 20 mug/ml. RBP was demonstrated in colostrum, but only in a low concentration (in the order of 5 mug/ml).

1977


Abstract
During the early 1970s the eastern and northern part of Ethiopia suffered from severe drought. In 1973-74 large areas of the administrative region of Wollo were severely affected by famine. Out of a total population of 2.4 millions 50-100,000 excess deaths occurred. Widespread migration in search of food took place. Shelters were organized, most of them along the Addis Ababa-Asmara main road. At the peak of activates they harbored some 30,000 people. The present study, carried out in May-June 1974, analyses the shelter population with respect to origin, age and sex distribution, weight/height ratios in children, reasons for migration and fate of property.


Abstract
Owing to drought and complex socio-economic factors, Ethiopia has suffered during the 1970s from severe food shortage, periodically and region wise amounting to dawn right, widespread famine. Based on the experience gained, a model for a “Consolidated Food and Nutrition Information System” has been developed.

Abstract
Based on the principle worked out in Ethiopia by an inter-ministerial Technical Working Group concerning a Consolidated Food and Nutrition Information System repeated surveillance was carried out in the Ogaden area in South East Ethiopia. Data were obtained on four different occasions between June 1974 and June-August 1975. They related to rainfall, livestock holdings, price indices, human nutritional status and mortality. Most of the data were collected separately for the northern and southern part of Ogaden.

The various recordings indicated a marked deterioration of the situation from June 1974 to February-March 1975. As a consequence coordinated and large-scale relief measures were inaugurated. The considerable improvement noted with respect to all indicators in June-August 1975 could be interpreted as the combined effect of relief measures and delayed but quantitatively normal rainfall.


Abstract
The (potential) activities of the two lipases in human milk were determined in breast milk samples collected from Ethiopian and Swedish mothers. The major lipase in human milk is dependent on bile salts for activity and probably participates in intestinal digestion of milk lipids in the newborn. The levels of this lipase in the milk did not change with time after parturition but differed between the groups so that it was higher in the privileged Ethiopian mothers than in the non privileged Ethiopian mothers, who in turn had a higher level than the Swedish mothers. The other lipase is a serum-stimulated lipase (lipoprotein lipase). The level of this lipase varied between samples from different mothers as well as between different samples from the same mother. It tended to be lower in samples obtained at 4 to 5 days after parturition (Swedish mothers) than in later samples. There were in this case no significant differences between non privileged and privileged Ethiopian mothers or between them and Swedish mothers.

1978


Abstract
The dietary pattern, physical work output and blood lipids were studied on three groups of healthy, young, urban Ethiopian men differing in the degree of westernization. The results showed striking increases in serum lipids that were
associated with the degree of westernization of the diet. These changes could not be accounted for by differences in other group characteristics such as age, weight, smoking, or length of residence in Addis Ababa. The effects of the level of physical work output on serum lipids were equivocal because the methods used for the assessment of energy output yielded crude approximations only.


Abstract

A total of 1374 cases of nurolathyrysm have been registered from Dembia and Fogera plains of the Gonder region, giving a prevalence rate of 9.8 per thousand for the total area studied. The prevalence rate for each of the plains was 24.4 and 6.2 per thousand for Fogera and Dembia plains respectively. Three hundred and seventy-one cases at different stages of the disease were reported from 244 households that were deeply studied. The male to female ratio of these cases was 2:3:1, and more than 80% of the cases were below the age of 40 years. The clinical picture was in confirmation of earlier descriptions by other investigators. Lathyrus sativus made a third and more of their daily diet for 88.4 percent of these families. Lathyrus was consumed by 76 percent of the families for three to six months before the disease was noticed in the family. Predisposing factors for this epidemic were drought, flooding and pestilence between April and September, 1976 that resulted in a famine condition. The findings of this study, which is possibly the second recorded report of such an epidemic from the country, reveal the public health importance of neurolathyrysm in Ethiopia in general and in the drought-prone areas in particular.

1979


Abstract

Kocho is fermented product prepared from the pseudo-stem, corm and tubers of Ensete (Ensere Ventricosum), commonly known as false banana. Kocho constitutes the staple food for approximately one-sixth of the Ethiopian population in southern and southwestern Ethiopia. The protein content of kocho from 29 cultivars of ensete as a function of time of fermentation was investigated. Fermentation was generally found to reduce protein content of the relatively high-protein cultivars and had no effect or in certain cases slightly increased protein content of the relatively low-protein cultivars. The reduced protein content is attributed to leaching of the more soluble proteins and amino acids. The essential amino acid content of kocho from two ensete lines was also investigated. Fermentation had the general effect of increasing the essential amino acid content of kocho. Chemical score values using whole egg protein as reference showed methionine and isoleucine as the first and second most limiting amino acids, respectively.

Abstract
Thyroxin \( (T_4) \) and Tri-iodothyronine \( (T_3) \) uptake were determined by the competitive protein binding (CPB) method, using Thyopac kits in serum samples from 580 consecutive cases (115 males and 465 females). Analysis of the \( T_4, T_3 \) uptake and the free Thyroxin index (FTI) values showed that 82.8% of the cases were euthyroid, 6.9% were hypothyroid and 10.3% were hyperthyroid, according to the reference intervals (normal ranges) supplied with the kits. Positive agreement in 118 cases between clinical impression and confirmatory laboratory results was 85.2% for euthyroidism, 15.4% for hypothyroidism and 16.7% for hyperthyroidism.


Abstract
Treatment of 13 urban Ethiopian children with mild ascariasis did not produce any evidence of improved intestinal morphology and absorption or nutritional status. Ascariasis treatment had no impact on anthropometric measures in an additional study group of 84 children. A review of the literature reveals that the nutritional consequences of ascariasis are uncertain.

1980


Abstract
The present study confirms the relatively high iron content of tef (Eragrostis tef) as consumed. Careful cleaning of tef has shown, however, that the actual content of iron in the uncontaminated seed is no more than for other common cereal crops. Thus, the study unequivocally reveals that the high iron consumed by that part of the Ethiopian population for which tef is the staple food crop is derived from sources external to the seed. The study also shows the difficulty of rendering tef free from contaminants, which are responsible for the apparent high iron content, even when non-traditional methods of threshing are employed.


Abstract
The study attempted to determine if heavy physical labour by mothers during pregnancy affected fetal growth when such mothers had calorie intakes which were below 70 percent of WHO/FAO recommended standards. Full term infants of such mothers had a mean birth weight of 3060±355 (SD)g compared to 3270±368 (SD)g for the newborn of less physically active mothers on similar low calorie diets \( (P<0.01) \). the mothers who engaged in heavy labour had a mean pregnancy weight gain of 3.3±2.4 (SD)kg, independent of the birth weight of their
offspring, compared with 5.9±3.3 kg for the less active mothers (P<0.001). the mothers’ weight in early pregnancy had an insignificant influence on birth weights when mothers were on low calorie intakes.

1981


Abstract

Injera, a fermented food prepared from Ergostic tef and the staple diet of many Ethiopians, had no aflatoxin. Red pepper powder and its paste had aflatoxin 32 and 10µg/kg. Groundnuts and their butter (peanut) contained 35 and 105µg/kg, respectively, but are eaten only by limited numbers of the population. It is suggested that dietary aflatoxins are not the main cause of liver diseases which are prevalent in Ethiopia.


Abstract

Faffa, the commercially produced infant formula in Ethiopia, contains approximately 20% protein derived from wheat, soy flour, chick peas and skim milk. The paper examines the effect of substituting the chick peas in Faffa with haricot beans. Protein efficiency ratio (PER) was drastically reduced due to the substitution. Pre-toasting the haricot beans improved the PER value of the Faffa to the level of that of chick peas Faffa.

The essential amino acid patterns of the two preparations of Faffa were found to be similar and therefore could not explain the difference in PER. It was suspected that improvement of PER by heat treatment of the haricot bean Faffa was due to inactivation of the trypsin inhibitor. Analysis for trypsin inhibitor content confirmed that the lower PER value for Faffa prepared from untoasted Faffa is due to higher trypsin inhibitor content of haricot beans as compared to chick peas.


Abstract

The aflatoxin content of selected foodstuffs commonly consumed in Ethiopia was investigated. Quantitative determination of aflatoxin content was made flurometrically by use of Velasco Fluorotoxin Meter after passing the extract through a minicolumn consisting of fluorsil, silica gel and aluminia. Authentic samples of B1 were used as standards for the assay.

Injera, the fermented, pancake-shaped food which is commonly prepared from Ergostic tef and which constitutes the staple diet for a significant portion of the Ethiopian population, showed no aflatoxin contamination as commonly prepared and handled. Fermentation of the dough or storage of the Injera for prolonged periods did not have the effect of increasing aflatoxin contamination. Preparations of red pepper powder and its paste were shown to have some aflatoxin contamination. Red pepper is widely and regularly consumed in Ethiopia.

As expected, samples of peanuts and peanut butter were shown to be contaminated with aflatoxins. The consumptions of these foodstuffs in Ethiopia is,
however, very limited and localized. Results of several other foodstuffs examined generally showed aflatoxin content significantly lower than 30ppb, which is judged to be the tolerable limit. In the light of such results as are presented, it is suggested that high levels of aflatoxins may not be the major causes for the high incidence of liver diseases in Ethiopia.


Abstract

Porphyria cutanea tarda (PCT) is common in Ethiopia and invariably affects the liver. Treatment by abstention from alcohol and avoidance of direct sunlight often failed to achieve lasting improvement. Phlebotomy is unacceptable to most of our patients and impractical as a routine therapy. Chloroquine phosphate 500 mg (300 mg base) given daily for 10 days to 24 patients with confirmed PCT was found to be uniformly effective. Both clinical and biochemical remissions were complete. The side effects of chloroquine include fever, nausea, vomiting and myalgia which predictably occur on the third day of therapy and subside within 72 hours. Since all other modes of therapy are ineffective or impractical and since the response to chloroquine is prompt, effective and reproducible and the side effects are brief, mild and do not cause permanent hepatic damage, it is suggested that this drug is currently the most practical treatment for PCT in areas where repeated phlebotomy is unacceptable and patient follow-up is unsatisfactory.


Abstract

The clinical, biochemical and histological features of 75 Ethiopians with Porphyria cutanea tarda (PCT) are described. PCT in Ethiopia is definitely related to alcohol abuse and there is no clinical evidence for hereditary predisposition. Significant elevation of transaminases and bromsulphthalein retention, moderate to marked hepatic siderosis and inflammation with little or no fibrosis, suggestive of mild or likely reversible parenchymal changes, characterize the liver affection in these patients.

A similar study of 18 patients with hyper pigmentation of the face and hands but without blisters, an unexplained but common feature of liver disease in Ethiopia, revealed that serum iron and urinary uroporphyrin levels were normal in eight but significantly elevated in ten (56%). Neither elevated serum iron and hepatic siderosis nor increased urinary uroporphyrin completely explains the hyper pigmentation in this group of patients.


Abstract

Thyrotoxicosis due to an isolated elevation of T3 in 5 Ethiopian patients, 2 with borderline clinical manifestations and 3 overt cases, is presented. The value of the
routine determination of T3 in the investigation of thyrotoxicosis and the implications of an isolated elevation of T3 are discussed.

Abstract
Summarizes the results of 2 surveys undertaken in the last 5 years by the Ethiopian Nutrition Institute on trends in breastfeeding and the introduction of supplementary foods as a means of monitoring the changes taking place in various population groups in both urban and rural areas. Recommendations for action made by an interagency meeting organized to discuss the promotion of breastfeeding are also outlined.

1982

Abstract
Tef fermentation in the Injera making process is carried out by a group of fermentative, mostly aerogenic gram negative rods, lactic acid bacteria and yeasts growing in successions in the tef dough. They are responsible for bringing about the desired fermentative changes. Those organism, most of which are discarded with the liquid layer before baking, remove 4-13% of the tef nitrogen, depending on the duration of the fermentation.

Abstract
The dominating yeast flora at the peak of the fermentation consisted of Torulopsis and Saccharomyces species. Yeasts of the genera Candida and Pichia became prominent in the yellow fluid that settles on top of the dough in the later stages of the fermentation.

Abstract
Forty-eight of 84 Ethiopians with confirmed porphyria cutanea tarda(PCT) had percutaneous liver biopsy which was studied for histological changes, siderosis and porphyrin fluorescence under ultra-violet light. Although almost all of the patients admitted to excessive local alcohol ingestion, none had hepatic histology characteristic of alcohol injury such as steatosis and Mallory bodies. The histological changes revealed mild and variable degree of inflammation. Hepatic siderosis (graded semi-quantitatively) was significant in the majority but the amount did not correlate with the severity of the parenchymal changes, or the serum or the level of urinary uroporhyrin. Abnormal serum transaminases and urinary porphyrin levels were reversed to normal by choroquine therapy. The clinical presentation, results of the liver function tests, urinary uroporphyrin and corproporhyrin levels, histological picture and response to chloroquine treatment
all suggest that PCT in Ethiopia invariably affects the liver as an early and most likely reversible form of hepatitis.


Abstract
Forty-six cases of thyrotoxicosis, 8 males and 38 females, were seen over a period of two years from March 1979. There were 19 cases of toxic multinodular goiter, 22 of Graves’ disease, four of toxic adenoma and one of subacute thyroiditis. The median age of those with toxic multinodular goiter was 49 and of those with Graves’ disease was 30 years. The five most common symptoms were sweating/heat intolerance (82.6%), weight loss (82.6%), palpitations (82.6%), nervousness and irritability (73.9%) and insomnia (69.6%). Six of 24 non-pregnant females of child bearing age had menstrual disturbances. The five most common signs were goiter (97.8%), tachycardia (100.0%), sweating (84.7%), and fine finger and tongue tremors (89.1%). Among the 22 cases of Graves’ disease, 13 (59.1%) had exophthalmos and 4 (18.2%) had pretibial myxoedema. Treatment with propylthiouracil or carbimazole was effective in controlling the thyrotoxicosis. Granulocytopenia developed in two cases and skin allergy in one other, necessitating use of alternative treatment. Seven cases had subtotal thyroidectomy after preparation with antithyroid drugs or propranolol and Lugol’s iodine.


Abstract
Over 100,000 individual medical records were reviewed from the out-patient Department of Ethio-Swedish Paediatric Clinic (ESPC) in Addis Ababa, covering January 1976 to March 1980. The out-patient medical record books of the Ophthalmic Unit of Menilek II Hospital, Addis Ababa, for the period January 1975 through August 1978 were also examined. A total of 188,737 patients was registered at the out-patient units of both medical centers, of whom 685 (0.36%) were identified as cases of hypovitaminosis A. of these, 510 (74.4%) were diagnosed for vitamin A deficiency (unspecified), 132 (19.3%) for Bitot’s spot, and 43 (6.3%) for keratomalacia. Data analysis of cases of keratomalacia from Addis Ababa shown as underestimated prevalence of 0.005%, with predominance of males (56.8%) over females (43.2%), and affecting more children in the age group 0-2 years (67.1%) than those in the age ranges 3-5 or 6-14 years. The report indicates that xerophthalmia in many of its clinical forms prevails among young children in Ethiopia, but to an unknown degree.


Abstract
A clinical examination was undertaken in May 1979 of 25 patients among state farm workers in Setit Humera, north-western Ethiopia, who were suspected of dry beriberi. The evaluation indicated thiamine deficiency as the underlying cause of the problem. Difficulty in walking (22 patients), pain (24), and swelling of the lower externalities (19) were the most common symptoms elicited. Neuro-
muscular findings included decreased active power, increased deep tendon reflex (DTR), decreased or absent DTR, and clonus. The medical records were reviewed of over 2000 workers before they left for Humera, while they were at Tatek recruiting station, Addis Ababa. These records showed that, of 11% diagnosed as musculo-skeletal disorders, more than one-third were identified as having muscular rheumatism and unspecified rheumatism. Analysis of such data as could be obtained suggests that thiamine deficiency in all its forms might be a more common problem that is suspected in Ethiopia, and that physical activity, hot climate and high carbohydrate content in diet are as important as thiamine deficiency itself as causes of dry beriberi.

1983


Abstract
In this study, grains and pulses were exposed to methyl bromide for 48 hours and to phosphine for 72 hours. They were aerated for 3 months before reaching the consumer. These methods are used under normal conditions when stored grain, etc., is fumigated against insect pests in government grain stores in Ethiopia. The residues of inorganic bromide and phosphorus were found in general to be within the tolerance limit accepted by the World Health Organization/Food and Agriculture Organization.


1984


Abstract
A new spectrophotometric method for the determination of total gossypol content in cottonseeds and cottonseed meals has been developed. The method is based on the reaction of gossypol with 3-amino-1-propanol and its subsequent complication with iron (III). The green colored iron (III)-bis-(aminopropanol)-gossypol complex has a characteristics absorption maximum at 620 nm. The colored system obeys Beer’s law in the concentration range of 4080 ppm of gossypol. The effects of several experimental variables on the determinations of gossypol have been studied and the stoichiometric composition of the complex has been determined. The new method has been found to be simple, rapid, and precise and to yield results comparable with the standard AOCS method. The method has been applied for the determination of total gossypol in several cottonseed and cottonseed meal samples.

1985

Abstract
Kocho and Bulla are the two main fermented products of ensete (*Ensete ventricosum*). The predominant microorganisms present in these products were isolated and biochemically characterized. The most abundant group of microorganisms was the lactic acid bacteria. Others encountered frequently were spore forming gram positive facultative anaerobes. Occasionally, yeasts and molds were also isolated. The PH of both products was found to be between 4 and 5.


Doesn’t have abstract but its full article is found using this link.
http://archive.unu.edu/unupress/food/8F071e/8F071E06.htm

1986


http://www.greenstone.org/greenstone3/nzdl;jsessionid=0B7169A747EC6FE32E430715895FA918? a=d&c=ccgi&d=HASH63aea6a2979bba52a2a513.3.2[np&sib=1&p.s=ClassifierBrowse&p.sa=&p.a=b

Abstract
The authors examine the effect of income on nutritional status in 2 samples of Ethiopian children. The mean value of the anthropometric indicator percentage of expected weight-for-height is presented and shows little difference between the 2 groups. Estimates of wealth (assets and men's and women's income), however, reveal considerable differences in holdings. Multiple regression analysis demonstrates that age and sex explain a greater percentage of the variance in the indicator of height-for-age than the income variables. The maximum variation explained by any combination of the variables examined in 40% of height-for-age, accounted for by age, sex, family size and women's income in the group who are poorer in all the wealth indicators, except for livestock. The conclusion is that income is an insignificant influence on nutritional status in these groups. Although the limited number of variables analyzed and the small difference that was found between the 2 groups studied combine to leave the authors with more questions than answers at the end of the paper, their presentation paves the way for more in-
depth study of the multiple factors related to nutritional status. Wendy McLean
ADDITIONAL ABSTRACT: Anthropometric measurement of children in two
communities in Harar Zuria District, Ethiopia, was used to describe the
relationship between family income and malnutrition. Families with higher
incomes cultivating the stimulant khat (Catha edulis) as a cash crop, are compared
with lower income families using regression analysis. Farmers cultivating khat
were found to have a total cash income around three times the income of farmers
who do not grow khat. They also possess a considerably greater number of market
goods such as radios, lanterns, and tin-sheet house roofs. The nutritional state of
children in khat-producing farm families is similar to that of children in other
farm families. Differences are smaller than might be expected from the large
differences in cash income between the families.

39. Zewdie Wolde-gebriel. Endemic goiter in Africa II. Towards the eradication of
endemic goiter, cretinism, and iodine deficiency. Pan American Health
Abstract
Endemic goiter appears to be a major problem in many parts of east, central and
southern Africa, but accurate assessment is hampered by the fragmentary nature
of most regional surveys. Countries in which prevalence’s of greater than 40% have been recorded include East and Western Cameroon, Ethiopia, Kenya, Mali, Nigeria, Sierra Leone and Zambia. There are few programs to correct iodine
deficiency at present.

40. Zewdie Wolde-Gebriel. Iodine deficiency disorders in Ethiopia: iodine deficiency
disorders in Eastern, Central and Southern Africa. Symposium Gaborone
(Botswana) NINI-ICFAN 1986; 28-36.

1987

41. Gustaaf P. Sevenhuysen and Zewdie Wolde-Gebriel. Pregnancy outcome and
maternal weight in an Ethiopian famine relief camp. Ecol. Food Nutr. 1987; 22:11-
17.
Abstract
During the food emergency of 1984/85 in Northern Ethiopia records were kept on
births in one relief camp. In retrospective analysis of these records birth weight
and neonatal mortality were related to selected maternal characteristics. Mean
birth weight were significantly lower than those previously reported in other
Ethiopian populations. Birth weights were related to maternal weights recorded
immediately after delivery. Neonatal mortality increased as the maternal Body
Mass Index decreased. However, birth weight only showed a significant reduction
when maternal BMI was below 18 kg/m².
Key words: Pregnancy, Famine, Body Mass Index, Birth weight, Ethiopia, Neonatal mortality, Maternal weight.

42. Jemal Abdulkadir, Biru Mengesha, Zewdie Wolde-Gebriel, Petros Gebre, Graham
Beastall and John A. Thomson. Insulin-dependent ketosis-resistant diabetes in
Abstract
Anthropometric, clinical and biochemical findings were compared in 30 rural (group A), 18 urban insulin-requirening (group B) and 45 urban oral-agent-responsive (group C) newly diagnosed diabetics. Mean ages at onset were 28.3±12.0, 25.6±14.5 years respectively. The differences between A and C and between B and C were significant. Group A were poor and malnourished, with body mass index (BMI) 15.9±1.9 and 17.2±3.7 kg/m² for males and females respectively, presented with a long history of classical diabetes without ketoacidosis and required insulin in modest doses. 3 of 10 cases had excess stool fat but none of 13 unselected cases had pancreatic classification. Group C were better nourished, with BMI 22.6±2.8 and 22.4±4.5 kg/m², and responded to oral agents. Group B, with BMI 17.2±2.6 and 18.6±3.1 kg/m², required insulin for control but had C-peptide levels above 0.02 nmol/l in 10 of 15 cases. Anthropometric indices for males, but not for females, were significantly lower in group A than in group B or C. there were significant differences in levels of glucose between A and B and A and C, free fatty acid between A and C and B and C, insulin between A and B and A and C and C-peptide between A and C and B and C. of the three groups the rural type most closely resembled the tropical variants.


Abstract
The palatability and acceptability of sorghum based Faffa was evaluated in Ethiopian children aged 2–5 years. The Faffa was offered in sufficient amounts to make a significant contribution to the dietary intake of the children. The sorghum based Faffa was well accepted when offered as porridge, bread or pancake mixed with the traditional Ethiopian diet so as to contribute about 50 per cent of the daily protein intake. Bulk reduced Faffa porridge was prepared by adding porridge made from germinated (malted) sorghum to ordinary Faffa porridge. The bulk reduced porridge contained 25 per cent more Faffa flour compared to ordinary porridge though of similar consistency. However the mean daily intake of solid food was less in bulk-reduced Faffa (758 g) compared to ordinary Faffa (839 g) resulting in about the same average daily energy intake. This finding suggests that the children were able to adjust their energy intake by modifying their food intake.

1988


Abstract
Tef (Ergostic tef) is a small seeded millet-like cereal grain indigenous to Ethiopia. It is commonly consumed as Injera, a pancake like bread, made from fermented dough. The fermentation is generally spontaneous but may also be initiated by the addition of a starter culture from the previous fermentation.
The carbohydrate composition of tef flour from both white and red seeded varieties and the changes that occur during domestic fermentation and baking has been investigated. Both varieties of tef contained ca. 2.7 g/100 g DM of free sugars, predominantly sucrose (95%). Fermentation initially increased the amounts of free sugars; thereafter the total fell. The changing pattern of free sugars during fermentation was the same in both varieties and was due to changes in the microbial population dynamics resulting from dynamics changes in dough PH. Fructose was found to be the principal free sugar in the fermenting dough and cooked product. After 72h fermentation, the microbial population had utilized 9% of the starch in both varieties. The non-starch polysaccharides (NSP) (dietary fiber) were unaffected.


Abstract
The food emergency of 1984 and 1985 in Ethiopia affected populations over a large area of the country. The effect of pregnancy outcome is described by retrospective analysis of clinic records from two relief camps. Comparison is made with pregnancy outcome observed over the same time period among two urban populations in Ethiopia. Birth weights observed in the relief camps were lower than in the urban populations. Similarly, the proportion of low birth weight infants was higher in the relief camps. The average of women giving birth in one relief camp was significantly higher than that of women in the urban areas. Differences between the camps and the urban areas were also found in the proportions of male and female infants born.

Key words: Pregnancy, Famine, Ethiopia, Birth weight, Low birth weight.


Abstract
For the purpose of computing changes in food cost over time as well as the planning of proper nutrition education and dietary counseling, the cost of important Ethiopian foods was collected in Addis Ababa markets for three and one-half years and computed for the amount of energy and protein yield per unit price. In general cereals and legumes fared well in their contribution of these nutrients at low cost. Certain foods, such as vetch, sugar and marmalades were also found to contribute a significant amount of nutrients at low cost. Because of the neurotoxin content in vetch and the contribution of a single nutrient as an energy source in the case of the latter two, their utilization during meal planning is subject to careful consideration. Foods of animal origin are second to last in their nutrient contribution per cost although their nutrient density makes them important in consumer demand. Root crops and vegetables that are known for their bulk are at the bottom of the list of good nutrient contributors per cost.

47. Eyassu Habte-Gabr, Aberra Geyid, Dibaba Serdo, James Biddle and Peter L. Perine. Single-Dose Treatment of uncomplicated Acute Gonococcal Urethritis in

**Abstract**

A total of 140 Ethiopian men with gonococcal urethritis were randomly assigned to treatment with aqueous procaine penicillin G (4.8 X 10^6 units intramuscularly [im] plus 1.0 g of oral probenicid); oral ampicillin (3.5 g plus 1.0 g of oral probenicid); spectinomycin (2.0 g im); or oral rosoxacin (Acrosoxacin; 300 mg). Failure rates were 24%, 19%, zero, and 3%, respectively. Forty-four (31.4%) patients were infected with penicillinase-producing Neisseria gonorrhoeae (PPNG) and were evenly distributed in the treatment groups. All 39 PPNG strains analyzed for plasmid content possessed a 2.6-Mdalton plasmid; 28 (71.8%) had a 3.2-Mdalton beta-lactamase-encoding plasmid, ten (25.6%) had a 4.4-Mdalton plasmid (three with and seven without a 24.5-Mdalton plasmid), and one had only a 24.5-Mdalton plasmid. Two patients were infected with N. gonorrhoeae-possessing plasmids apparently capable of encoding but not producing beta-lactamase. Both spectinomycin and rosoxacin are excellent single-dose treatment regimens for gonococcal urethritis in men. All people receiving these drugs in Ethiopia should be tested serologically for syphilis, however, as eight (11.8%) of 68 men in this study also had active latent syphilis.


**Abstract**

Thirty Ethiopian malnutrition-related diabetes mellitus (MRDM) patients were HLA typed and their HLA antigen frequencies were compared to those of 31 previously typed insulin-dependent diabetes mellitus (IDDM) patients and to 84 controls from the same ethnic background. In comparison to controls, a striking association between MRDM and HLA-DR3 (X^2 = 15.15, p = 0.0001) was observed, whereas the frequency of HLA-DR4 was non-significantly increased (RR = 1.72). The frequency of DR2, DQw1, and DQw6 was decreased among MRDM. In comparison to IDDM that is associated with both DR3 and DR4 in this population, MRDM showed no significant differences in HLA class II antigens frequencies. Therefore, the genetic basis of susceptibility to MRDM and IDMM in Ethiopia is at least partially identical.


**Abstract**

Injera, pancake-like fermented bread prepared from white or red tef (Eragrostis tef) flour, is the traditional staple food of Ethiopia. The fate of the major components of the bran and endosperm during the two-stage fermentation and baking has been examined by light and electron microscopy. Angular starch granules released from compound grains during milling showed a range of erosion effects typical of enzymatic degradation during fermentation. The appearances of bran and embryo fragments, cell walls and protein bodies were unaffected by fermentation or
baking. Microorganisms, the natural contaminants of tef grains, produced strands of fibillar material during fermentation that bound the flour particles together. Apart from the presence of polyphenolic in the tasta cells of red tef, no structural differences were observed between red and white grain during the preparation of Injera. The portion of dough that was thinned, boiled and returned to the mixture for the second fermentation period contained swollen gelatinized starch. During cooking, the starch within the Injera was totally gelatinized to form a steam-leavened, spongy starch matrix, in which fragments of bran and embryo, microorganisms and organelles were embedded. The protein bodies played no role in the formation of the matrix-gas bubble interface.


Abstract
Growth of Salmonella typhimurium, Staphylococcus aureus and Pseudomonas aeuginosa was inhibited when the PH of fermenting tef approached 5.0, 5.0, 5.5 and 5.0 respectively. However, the test organisms grew in far more acidic conditions in broth than in fermenting tef and this is due to antimicrobial substance (s) being produced by some of the lactic acid bacteria. Except for Bacillus cereus spores, all the test organisms were heat inactivated during the baking process of the final tef Injera.


Abstract
As practiced domestically in Ethiopia, tef flour mixed with water was allowed to ferment by the action of the endogenous micro flora to produce sour dough prior to baking to produce Injera, a pancake like bread. Lactic and acetic acids were the major organic acids produced (90%) with seven other volatile fatty acids (VFAs), propionic, isobutyric, n-butyric, isovaleric, n-valeric, isocaproic representing less than 5%. Baking reduced the proportion of acetic acid but fall in PH during fermentation and for the sour taste of Injera, whilst the VFAs are the main contributors to the characteristic flavor.

1990


Abstract
The purpose of the study was to establish the existence of seasonal exposure to energy deficiency in rural areas of developing countries and to investigate the
sequence of appearance and the nature of energy-sparing mechanisms utilized under real life conditions. The body weight of a group of 226 rural Ethiopian women was measured repeatedly over a one year period, at 45 day intervals. On a sub-group of 22 non-pregnant women total energy intake, TEI, total energy expenditure, TEE, and basal metabolic rate, BMR were also measured by the precise weighting method and by indirect calorimetry (Kofranyi-Michaelis respirometer or Douglas bag) and activity diaries. Body weight was found to have a moderate statistically significant seasonal trend, with an overall loss of 1.6 kg. Women with higher BMI had larger seasonal swings of their body weight. Seasonal fluctuations were also found for TEI (maximum difference 420 kcal/d, not significant), and for BMR (maximum difference 200 kcal/day, p<0.000). TEE (mean yearly value of 1909 kcal/d, 42kcal/kg) was very stable over the year and did not show any seasonal fluctuation.

The present findings suggest that, under the study circumstances, seasonal exposure to fluctuation in food availability caused a moderate weight loss which was sufficient to induce metabolic adaptations, but not to cause any detectable change in physical activity.


Abstract

Cases of malnutrition-related diabetes mellitus conforming to the description of the protein deficient pancreatic diabetes type in Ethiopian patients were compared with Type 1 (insulin-dependent) and Type 2 (non-insulin-dependent) diabetic. Fourteen of 39 malnutrition-related diabetes mellitus patients had fat malabsorption compared with only two of ten Type 1 diabetic patients and one of nine control subjects. Xylose absorption was normal favoring a pancreatic cause for the malabsorption. Plasma C-peptide during oral glucose tolerance test was significantly lower than that in Type 2 diabetic patients and normal control subjects (p less than 0.01 to 0.001) and was also consistently but not significantly higher than in Type 1 diabetic patients. Glucagon secretion patterns were similar in malnutrition-related and Type 1 diabetic patients. Of 23 new malnutrition-related diabetic patients treated with glibenclamide after nutritional rehabilitation and insulin treatment, only three responded, 14 were unresponsive but remained ketosis free for over eight days while another six developed ketoacidosis or significant ketonuria within two to six days during the trial. Sixteen unselected Type 1 diabetic patients who discontinued their insulin therapy, all developed frank ketoacidosis after a mean of 5.5 days. The similarity of the malnutrition-related and Type 1 diabetes mellitus in age of onset, insulin requirement for diabetic control and appearance of ketosis-proneness in some cases, together with the similarity of C-peptide and glucagon secretion patterns suggest that the protein deficient pancreatic diabetes variant of malnutrition-related diabetes mellitus may be Type 1 diabetes mellitus modified by the background of malnutrition rather than an etiologically separate entity. Community based studies
are required to ascertain frequency and types of diabetes mellitus in malnourished populations and the role of genetics and environment in their etiology.

**Key words:** Ethiopian malnutrition-related diabetes mellitus, Rehabilitation, ketosis-resistance, fat malabsorption, C-peptide, Glucagon.


**Abstract**

A total of 500 subjects (288 males and 212 females) were tested in Addis Ababa, Ethiopia, in Virology and Rickettsiology Division of the National Research Institute of Health, in 1987, for anti R. prowazekii using Complement Fixation Test (CFT). Out of these 58 subjects (41 males and 17 females) were also tested for anti R. typhi using the same test. The study population included three groups. Group I included 200 patients referred to the National Research Institute of Health (NRIH) for the Weil-Felix test for the diagnosis of typhus. Group II consisted of 200 patients with febrile illness visiting the Outpatient Department (OPD) of St. Paul's Hospital. Group III included 100 blood donors' serum samples included from previous collections. The blood donors had no sign of febrile illness during the collection of the blood samples. The results showed that anti R. prowazekii was detected in 38 subjects (7.6%). The sex ratio among the positive subjects indicated that there were 32 males (22%) and 6 females (2.8%). From the 58 subjects who were also tested for anti R-typhi only 7 (5 males and 2 females) (12%) were found to be positive. Only one person was found to be positive both for anti R. prowazekii and anti R-typhi. From 200 samples (Group-I) tested both by the Weil-Felix test and by Complement Fixation Test for anti R. prowazekii only 4 samples were positive by both test, thus showing very low percent agreement. Taking the three groups of subjects separately, it was found that 28 subjects (14%) were found to be positive for anti R. prowazekii from group I, 4 subjects (2%) from group II and 6 subjects (6%) from group III.


**Abstract**

Lathyrism is a disorder of the central motor system, induced by heavy consumption of the grass-pea, Lathyrus sativus an environmentally tolerant legume containing the neurotoxic excitatory amino acid beta-N-oxalylamino-L-alanine (BOAA). A complete door-to-door resurvey of the Dembia and Fogera regions of northwestern Ethiopia, areas endemic for lathyrism, revealed an estimated mean disease prevalence of 0.6%-2.9%. Most patients developed the disease in the epidemic of 1976/77, although new cases appear to have occurred with an estimated mean annual incidence of 1.7:10,000. Production and consumption of grass-pea is increasing in Ethiopia, making attempts to develop low-BOAA strains to prevent lathyrism increasingly important.

Abstract

Representative Landraces of Ethiopian barley (Hordeum w/? are ssp. i, u, qare) were reciprocally intercrossed with the wild progenitor (H. rw1gare ssp. spontaneum). Fertilization success, hybrid (F, and FZ) performances, and inheritance mechanisms were studied. Grains were obtained in combinations involving each d g n r e-parent and at least one of the spontaneum lines. The hybrids were vigorous and fertile. 21 % of the F, progeny gave less than 70 % seed-set while a similar proportion seeded fully. The average seed-set for vulgare lines varied between 65-90 YO, few plants having severe abortions. Some phenotypes segregated differently in different lines, indicating genotypic dissimilarity or varied effects of the genes under different genomic background. Thus, sponturreum can be grown under natural conditions in Ethiopia and direct hybridization with indigenous landraces allows for utilization of its genes.

1991


Abstract

Several samples of traditional alcoholic beverages namely, ‘tella’, ‘tej’ and ‘katikala’ collected from different regions of Ethiopia were analyzed for their methanol, fuel oil and ethanol contents. The mean values of methanol in ‘tella’, ‘tej’ and ‘katikala’ were 35 ppm, 47 ppm, 331 ppm, respectively. The mean values of fuel oil and ethanol determined were 66 ppm and 3.6% for ‘tella’, 104 ppm and 6.2% for ‘tej’, 963 ppm and 43.3% for ‘katikala’. Wide variations in results were obtained and this was attributed to different methods of preparation of the beverages at the domestic level.


Abstract

Samples of 15 different fruit and vegetable types were purchased from five small groceries around Addis Ababa. Enumeration, isolation and identification processes were performed for the microbial flora of each sample before and after 15-30 days of preservation. Both direct and enrichment culture media were used to distinguish
these micro flora as members of the groups of normal contaminants, indicators, spoilage and food-borne disease causing organisms. The overall result of this work indicates that a total of 25 different organisms, comprising 3 (12%) indicators, 15 (60%) spoilage, 5 (20%) food-borne pathogens and 2 (8%) normal contaminants, were isolated. The predominant isolates of these groups were *Escherichia coli* type I, among the indicators *Bacilli*, molds and *Enterobacter* species among the spoilage and *Staphylococcus aureus*, *Salmonella typhimurium* and *Bacillus cereus* among the pathogens.

The direct inoculation method revealed the isolation of more than one indicator organisms from each of 7 (46.7%) fresh or unpreserved fruit and vegetable samples, more than 3 spoilage organisms from each of 8 (53.3%) samples, and, at least, one pathogenic organism from each of another 8 (53.3%) samples. When enrichment culture method was applied, all these results were increased as: >1 indicator in 10 (67%), >3 spoilage organisms in 9 (60%), and pathogens in 9 (60%) of the unpreserved samples. The enumeration values of the indicator/organisms and the spoilage groups of mesophyllic aerobes/anaerobes, molds and/or yeasts were all above the accepted limits for such fruits and vegetable samples. This was shown to be true in 10 (66.7%), 4 (26.7%) and 6 (40%) samples for the indicators, spoilage mesopheles, and mold or yeasts respectively.

The preservation processes have proved to be effective in eliminating or reducing the numbers and types of the organisms isolated from each fresh sample. The affectivity of the preservation methods is discussed and its applicability in a simplified and comprehensive manual for a small-scale (household level) preservation of fruits and vegetables has been recommended.


**Abstract**

A total of 6636 children, aged from 6 months to 6 years and selected throughout the country using a multi-staged stratified sample design, were examined for signs of xerophthalmia. The concentrations of retinol and of beta-carotene were measured in 742 children, including those with xerophthalmia and every twentieth of the remaining children. Anthropometric measurements were made on 2909 of the children. Bitot's spots were seen in 1.0% of all children, with a higher prevalence in the pastoral (1.6%) and cropping (1.1%) agro-ecological zones than in the zones characterized by cash crops (0.4%) and 'ensete' (false banana, *Ensete ventricosum*) (0.0%). One case of corneal xerosis and 2 cases of corneal scar were also seen. Serum retinol levels were in the 'deficient' range (less than 0.35 mumol l-1) in 16% and 'low' (0.35-0.69 mumol l-1) in 44% of children. Serum retinol and clinical signs did not show any correlation with occupation and education of head of household, household size or anthropometric measurements. More stunting than wasting was observed, with peak prevalence of these signs of malnutrition being observed in the second year of life.

1992

Abstract
The fermentation rate and acidity of ititu, an Ethiopian fermented cow's milk, was investigated. Changes in pH and total titratable acidity, volatile organic acids and bacterial counts of fermenting milk samples kept at room temperature (21°C) and 28°C were recorded. Similar parameters were also monitored for pasteurized milk incubated at room temperature. In raw milk incubated at room temperature, the pH decreased from 6.6 to 4.2 while the lactic acid content increased from 0.2% to 1.4% within 24 h of fermentation. In pasteurized milk, the drop in pH and acid production patterns were very low during the first 24 h of fermentation. Raw milk incubated at either room temperature or 28°C was found better than pasteurized for production of ititu. The higher incubation temperature increased the tempo of fermentation and shortened the time required for development of flavor, aroma and texture in ititu. However, the desirable characteristics in ititu were fully developed when incubated at ambient temperature (21°C).


Abstract
The effect of resettlement programs and agricultural development projects on the tsetse population in Gambella was investigated. Adult tsetse was collected using bioconical trap and moving vehicle catches. The species collected were Glossina pallidipes, G. fuscipes and G. tachinoids. G. pallidipes was the most frequently encountered species. G. moristants which was reported to be abundant in the area (Balis and Bergeon, 1968; Hutchinson, 1971; Langridge, 1976) was not collected during the present survey.
About 155,000 ha of land, formerly reported as tsetse infested, is found to be tsetse free. The natural vegetation is being transformed into farmlands and villages, and the wildlife is being hunted out, remaining only in such areas as Demesaye and Gog forest.
Under such circumstances tsetse hosts may change from wild mammals to man and his domestic animals and outbreaks of nagana and sleeping sickness are likely to occur throughout the region.

Keywords: Resettlement, agriculture, Glossina, host, Gambella.


Abstract
A total of 721 children in the six schools for the blind in Ethiopia were studied. In 1988-1989 histories were taken to ascertain the predisposing factors and ophthalmological examinations and records were used to determine the causes of blindness. Ninety-five per cent of those examined had bilateral blindness, 12% did not know how they had become blind and, of those who provided information on how they became blind, 21% knew that they were born blind, 30% implicated measles as being responsible, and 13% implicated 'mitch' which is an Amharic
term used to describe a very wide range of nonspecific and vague illnesses of which measles probably constitutes a significant proportion. Seventy per cent of the blindness was due to either corneal opacity or phthisis bulbi. Of those with non-congenital bilateral corneal opacity or phthisis bulbi, 40% were preceded by measles and 17% by Mitch. A study of 66 adults in the handicraft and skill-training centers attached to the blind schools indicated that the principal predisposing factors of blindness were Mitch (30%), smallpox (15%), cataract (12%), and traditional eye medicine (11%). Seventy percent had corneal scars of phthisis bulbi and 14% cataract.

**Key words:** Blindness Causes, Predisposing factors, Schools for the blind, Ethiopia.

**1993**


**Abstract**

The nutritional status of the Ethiopian population has deteriorated further during the last two decades, reflecting the downturn in food production, which in turn is largely due to the political economy and the military rule of the Mengistu regime. Additional factors are the rudimentary agricultural system, the concentration and rapid increase of the population in the highlands and cultivation of steeps slopes, the emphasis on drought- and erosion-prone grain crops and on ensete, a food crop of low nutritional value, and the ever-worsening land degradation problem. Cultural food avoidances, the use of wild plants, and dietary changes in vulnerable populations such as refugees, internally displaced populations, and settlers in western Ethiopia have also been significant. Nutritional deficiency diseases were most common and severe in the traditional famine areas and in the war zone of Ethiopia. The impact of famine and war on the incidence and clinical course of communicable diseases can only be conjectured in the absence of longitudinal studies other than those in refugee camps.

A number of nutrition related activities are now being undertaken in Ethiopia, both by the government and by nongovernment organizations (NGO’s). The national food and nutritional strategy, which was drafted by the office of the National Committee for Central Planning in 1987 and is now being finalized by the new government’s Ministry of Planning and Economic Development, may provide the necessary guidelines and coordination. But the effectiveness of this policy will largely depend on the changes it can affect in the multifaceted ecology of malnutrition in different population groups and geographical areas in the long term, rather than merely greater provision of food supply in the short term.


**Abstract**
In April 1990, one hundred ninety people from Bebeka Coffee Plantation, Kefa administrative region, western Ethiopia, all with moderate to heavy infection with Onchocerca volvulus were treated with ivermectin (150 mcg/kg body wt.). Clinical examination and microfilarial counts in skin snips were repeated at intervals for eight months. Therapy was associated with minimal side effects. Significant difference in mean microfilarial load was observed throughout the eight months post-treatment period. Difference in repopulation of microfilariae between four and eight months was not significant in either sex or all ages. Of all cases, 71 (37.5%) maintained zero microfilarial counts after four months, while only 38 (20%) remained at zero level until the end of eight months. The merit of a yearly treatment program is discussed.


Abstract
A survey of the nutritional status of subsistence farmers was conducted over 13 months in a rural area of Ethiopia characterized by moderate climatic seasonality and intensive land exploitation. Bi-monthly questionnaires on food consumption, time allocation, agricultural production and cash flow were administered to 203 households and anthropometry performed on 1407 individuals. Comparison of post-harvest and pre-harvest anthropometry was made on 672 individuals (48% of the sample). In children, seasonal changes in the Z-score of weight-for-height were small and not significant. Height growth velocity showed instead a marked seasonal pattern, with values close to normal (-0.2 SD units) in July to December, a period characterized by better food availability, and lower values (-3.0 SD units) in January to June, a period characterized by intensive farm labor and heavy rains. Among the adults, body weight was highest in the post-harvest season (December) and decreased by 1.5 +/- 2.3 kg in men and 1.3 +/- 2.6 kg in women to the yearly minimum in the pre-harvest season (June). The paper shows that in these area children and adults both suffer from exposure to seasonal energy stress. The change in weight-for-height Z-score observed in children and the body weight loss observed in adults was greater in individuals of low socio-economic status and, within the same socio-economic level, in individuals with better nutritional status.


Abstract
The household integrated response to seasonal fluctuations in food availability and work load was assessed in a longitudinal study in two villages of southern Ethiopia. The household response to energy stress was estimated by pooling weight changes of all members of the family, accounting for the diverse biological and functional meaning of weight losses of different age and sex groups, and levels of nutritional status. On average, seasonal energy stress experienced by the households was modest (3.3%, P < 0.05 by Tukey test). The cumulative weight change of poor households was twice as large as that of rich ones, and evidence
was obtained of their further deterioration over the following agricultural year. Household food availability fluctuated seasonally, with evident socio-economic gradient: in the early pre-harvest season food stocks of poor households were 6.5 times smaller than those of better-off families (P < 0.001 by ANOVA). Unlike rich households, poor families markedly decreased the time devoted to agriculture in the pre-harvest season. Crop selection, quality of land management and time employed in agricultural work might have synergistically concurred to cause the stress situation.

   Abstract
   Survey studies have shown that there is wide-spread goiter in Ethiopia (mean incidence 25%). The occurrence of goiter is associated with low iodine intakes, but little information has been available on goitrogens. A program of distribution of iodized salt has been initiated to eliminate the goiter problem.
   Key words: Goiter, Iodine deficiency, Salt iodization

   Abstract
   A cross sectional study was conducted in 1987 to determine the extent of goiter in Awassa Zuria part of Sidama Awraja. Households were the subjects of the survey to assess goiter rates. Trained staffs were used for interview and clinical assessment of goiter rate. Among the total of 2,450 study population surveyed, 83.9% (n = 2,055) were school children. Out of the total study population, 40.5% (n = 993) were positive for goiter and ninety eight cases of the positive school children (n = 791) were randomly taken for biochemical tests. The Radio immunoassay technique was used to measure the levels of T3, T4 and TSH. The Sandell and Kolthoff technique was used to measure urine and water iodine. A comparison of T4 results, showed higher results for surface water users than piped water users and this has shown a significant difference (P < 0.001). It was higher in piped water compared to surface water. Further investigation however is required to fully elucidate the picture. Generally it is advisable to start iodine prophylaxis program in the studied areas.

   Abstract
   The effect of soaking time and soaking solution on the nutritional quality of grass pea seeds were studied. The soaking solutions used were: plain water (pH 7.3); 1mM HCl (pH3.0); 1mM NaOH solution (pH 11.0) and 0.1 per cent (w/v) wood ash solution (pH 12.0). Mature whole grass pea seeds soaked for 72 hr in the four soak media that were used resulted in total solids loss of 1.3, 1.2, 5.2 and 6.2 per cent, respectively. Total protein content increased by 11 and 13 per cent respectively, for seeds soaked for 72 hr in plain water and 1mM HCl. In contrast, a total protein loss of 12 and 16 per cent respectively was noted in seeds soaked
for 72 hr in 1mM NaOH solution and 0.1 per cent wood ash solution. The soaking process resulted in the loss of non protein nitrogen, total soluble sugars and reducing sugars. Soaking also influenced the ash and crude fiber contents of the seeds. The PH of the soaking solutions was also altered in accordance to the soaking process. However kikh showed significantly lower nutrient retention values compared to the whole seeds mainly due to the higher loss of solids during soaking.


Abstract
Hypovitaminosis A is a problem in many parts of the developing world. Beyond the stop-gap measures of capsule distribution and food fortification, increased consumption of accessible sources of vitamin A, specifically of the carotenoid provitamin A in yellow, orange, and green plants, has been promoted as the sustainable, long-term solution. However, a search of the available literature reveals few examples of human studies to support the effectiveness of this solution. Evidence from feeding studies shows an almost universally poorer uptake of intact carotenoids from plant sources as opposed to pure, chemical sources. With notable exceptions, the bioconversion of plant carotenoids to preformed vitamin A also seems to be inefficient. Epidemiologic observations in poor Third World populations and in vegetarians in an industrialized nation indicate a relatively greater potency for animal sources of vitamin A. In developing countries, low fat intakes, intestinal roundworms, recurrent diarrhea, and tropical enteropathy all may contribute to reduced utilization of plant provitamin A. The accepted 6:1 equivalency of beta-carotene to preformed vitamin A must be challenged and reexamined in the context of dietary plants. The consequences of operating on a miscalculation could be serious indeed for public health programs designed to alleviate and eradicate hypovitaminosis A.


Abstract
Lathyrism is a neurotoxic disorder caused by excessive, prolonged consumption of the hardy, environmentally tolerant legume, the grass-pea, Lathyrus sativus, which contains the neurotoxic amino acid beta-N-oxalylamino-L-alanine acid (BOAA). The disease develops after heavy consumption of grass-pea for over two months. It is uniformly manifested by a predominantly motor spastic paraparesis with varying degrees of disability. A door-to-door epidemiological survey for the disease using trained lay health workers was carried out in the major areas of northwest and central Ethiopia where L. sativus is grown. For security reasons some of the other endemic areas were not accessible for the survey. The survey involved a population of 1,011,272. A total of 3,026 affected persons were identified. The disease was found to be widespread in the northwest and central highland areas of the country. The prevalence rates ranged from 1/10,000 to 7.5/1,000. The highest prevalence’s were in North and South Gonder, and East and West Gojam. The male: female ratio of cases was 2.6:1; the females exhibited
a milder form of the disease. The cultivation of L. sativus is increasing in Ethiopia, which makes the development of low-BOAA strains very important in order to control the high incidence of lathyrism, a crippling disease which affects the productive young members of the society.

http://journals.cambridge.org/download.php?file=%2FBJN%2FBJN69_01%2FS0007114593000297a.pdf&code=6ba67f0145639f1535dff80e4f96db5

Abstract

A stratified goiter survey was conducted on 35,635 schoolchildren and 19,158 household members in all Regions of Ethiopia except Eritrea and Tigrai. The gross goiter prevalence (mean of male and female values) among schoolchildren and household members was 30.6 and 18.7% respectively, while that of visible goiter was 1.6 and 3.2% respectively. Prevalence was higher in females (27.3% in household members and 36.1% in schoolchildren) than in males (10.1% in household members and 25.1% in schoolchildren) and increased with age more in females than in males. The prevalence rates at higher altitudes were higher than those at lower altitudes in both schoolchildren and household members. Using an epidemiological model the consequences of iodine deficiency, including cretinism and maternal wastage, have been estimated.

Key words: Goiter, Iodine, Cretinism


Abstract

A total of 240 children were examined for vitamin A deficiency in a village in Hararge region of Ethiopia. Night blindness, Bitot's spots, corneal xerosis, corneal ulceration and corneal scars were observed in 69, 16, 2, 15 and 14 children, respectively, based on the most severe eye signs. Blood was collected from 76 children with eye signs and 9 other children selected at random. The concentration of retinol (vitamin A) in serum was $< 0.35 \text{ mmol/l}$ in 30.2% of children and the median serum retinol-binding protein, iron, transferring saturation and ferritin levels were low while the parameters of iodine status, total triiodothyronine, total thyroxine and thyrotropin, were all within the normal range. Levels of IgG and IgM were elevated in 78.8% and 82.4% children, respectively, while C-reactive protein levels were elevated in 42.4% of children. There was a higher prevalence of wasting (33%) than stunting (10%) with an additional 8% of children being both stunted and wasted. In the 2 years prior to the study, there were 74 deaths of which 17 were reported to be associated with ruptured corneas. The community had been dependent on relief food aid for the previous 6 years.


Abstract
A total of 14,740 schoolchildren in seven provinces of Shoa Administrative Region in Central Ethiopia were surveyed for the prevalence of goiter, xerophthalmia and anaemia. Hemoglobin and packed cell volume were assessed in 966 children in one province while an in-depth study was conducted on 344 children in the same province and two others. Goiter, xerophthalmia (Bitot's spots) and clinical anaemia were observed in 34.2, 0.91 and 18.6% respectively of the children. Most biochemical variables were within the normal range while those of hemoglobin (Hb) mean corpuscular Hb concentration (MCHC) and urinary I excretion were lower, and mean corpuscular volume, mean corpuscular Hb (MCH), and immunoglobulins G and M were higher. Hb was strongly correlated with retinol, ferritin, MCHC, MCH, packed cell volume and erythrocyte count while retinol formed a triad with transthyretin (TTR) and retinol-binding protein (RBP) which was all correlated with one another. Total and free thyroxin and total and free triiodothyronine were positively correlated as were the concentrations of the total and free hormones. Thyrotropin (TSH) was negatively correlated with total and free thyroxin and positively correlated with free triiodothyronine. Thyroxin and triiodothyronine in both free and combined forms were all correlated with thyroxin-binding globulin which in turn was negatively correlated with the triad retinol, RBP and TTR. The triad was also negatively correlated with C-reactive protein. Urinary I excretion was positively associated with total thyroxin and negatively associated with TSH. The anaemia found was not nutritional in origin but due to the effect of infestation with intestinal parasites and malaria.

**Key words:** Vitamin A, Iodine, Iron, Childhood.

---

1994


**Abstract**

A study was carried out at the Department of Biology, Addis Ababa University, in 1991 to determine the inhibitory potential of fermenting tef and the lactic acid bacteria isolated from fermenting tef dough on Salmonella spp., Pseudomonas aeruginosa, Klebsiella spp., Bacillus cereus and Staphylococcus aureus. The test bacteria grew in the fermenting tef up till 30 hr or till the pH dropped to 4.7. Thereafter, growth was inhibited and decreases in population were apparent. The results showed that the spent media from all of the four lactic acid bacterial isolates, namely, Lactobacillus spp., Pediococcus spp., Leuconostoc spp. and Streptococcus spp. inhibited the test bacteria. Acidity on its own was not responsible for the inhibition of the test bacteria. The spent medium from
Streptococcus spp. showed the best inhibitory activity amongst the lactic acid bacteria.


Abstract
A study was conducted to investigate the antagonistic potential of fermented kocho, aqueous extract of fermented kocho and spent media from lactic acid bacteria (LAB) isolated from it on Salmonella sp, Pseudomonas aeruginosa, Klebsiella sp, Bacillus cereus and Staphylococcus aureus. Fermented kocho (pH 4.3) inhibited growth of the test bacteria soon after their introduction into the food. The spent media from all of the four LAB, isolated from fermented kocho, namely Pediococcus sp, Leuconostoc sp, Lactobacillus sp and Streptococcus sp prevented the survival and growth of the test bacteria. The spent medium from Streptococcus sp showed the best antagonistic effect amongst all the LAB isolates. In all cases the inhibitory effects were independent of pH.


Abstract
Several species of the tribe Viceae (Leguminosae) produce non-protein amino acids that are toxic to man and animals. The neurotoxin β-N-Oxalyl-L-α, β-diamino propanic acid (ODAP) in cultivated Lathyrus sativus cases human neurolathyrism, a neurological disease resulting in the paralysis of lower limbs. Surveys have shown that there are large scale variations between species of Lathyrus and varieties of L. sativus for the amount of cellular ODAP. In the present investigation, thin layer chromathgraphy and chemical analysis were used to study the developmental variation in the amount of ODAP in tissues and organs of L. sativus. The results confirmed that the rate of synthesis and accumulation of ODAP varied during plant development. Increased rates of synthesis were confirmed in young seedlings and in the developing fruits of L. sativus.

Key words: Lathyrus sativus, Neurotoxin, ODAP, Plant development


Abstract
The effect of germination on the levels of total nitrogen, non protein nitrogen, free amino acids, carbohydrates, phytic acid and the neurotoxin BOAA (Beta-N-oxalyl amino-L-alanine) in grass pea (Lathyrus sativus) seeds was studied. During 6 days of germination, there were increases in total nitrogen, non protein nitrogen and free amino acids. The increase in crude proteins was 15 percent. Total sugars, reducing sugars and non-reducing sugars increased significantly while total carbohydrates decreased.
Fat and phytic acid contents declined by 38 and 50% respectively, where as there were no significant changes in crude fiber, true protein, and ash and BOAA contents.


Abstract
Species composition and behavioral patterns were determined for anopheline mosquito samples collected between October and September 1990, from Gambella region, south west Ethiopia. At least eight anopheline species, which differed in their habits, were found to be prevalent in the region. Findings of indoor-resting collection and hut density determinations showed the relative prevalence, in decreasing order of magnitude, to be *Anopheles pharoensis*, *A. gambiae* s.l., *A. nili*, *A. coustani*, and *A. ziemanni*. On the other hand, the relative frequency of occurrence based on outdoor human-bait capture was *A. pharoensis*, *A. ziemmani*, *A. coustani*, *A. squamosus*, *A. paludis* and *A. funestus*, in decreasing order of importance. The rate of human feeding of *A. nili*, *A. gambiae* s.l., *A. pharoensis* and *A. coustani* were 37.5, 33.0, 22.5 and 6.7%, respectively. Among the endophilic mosquitoes assayed, the overall infectivity rate was found to be 0.56%. Sporozoite rates of 0.77% for *A. gambiae* s.l. and 0.47% for *A. pharoensis* were determined.


Abstract
Ancillary to a community based mass treatment campaign of onchocerciasis with ivermectin; assessment of the drug’s effect on various intestinal nematodes was made in Bebeka, Southwest Ethiopia between 23 April and 23 July, 1990. A total of 231 people were invited for the study and all consented. From each, stool specimen was collected before treatment, two weeks and three months after administration of ivermectin at a dose of 150 mcg/kg body weight. Various intestinal parasites were observed in many of the samples, ranging from single parasite up to five mixed infections per slide. Efficacy of ivermectin against *Strongyloides stercoralis* was 100% throughout the observation period. Eggs of *Ascaris lumbricoides* were found in 74.5% of the stool samples collected before treatment and this was reduced to 3.5% and 48.9% in the post-treatment samples of 15 days and three months, respectively. Similar observation was made for the other geohelminths at a lower cure rate. This finding shows that apart from its primary purpose in the control of onchocerciasis, ivermectin has the added benefit of eliminating ascaris and strongyloides infection in areas where such parasites are co-endemic. Furthermore, its significant effect on the intensity of the other enteric nematodes will have a great impact on reducing transmission. The public health significance of population based mass chemotherapy with ivermectin is discussed.

**Abstract**

Grass pea seeds were given different treatments including cooking, boiling, autoclaving, dry heating and fermentation into tempeh. Changes in the levels of the antinutritional factors due to the treatments were estimated. Dry heat treatment completely eliminated phytic acid and greatly reduced tannins, trypsin inhibitor activity and ODAP (100%, 64%, 87.4% and 75%, respectively). Cooking reduced tannins (74%), trypsin inhibitory activity (81%) and ODAP (77%) while phytic acid was less affected (59.4%). Autoclaving had the most pronounced lowering effect on trypsin inhibitor activity (91%), whereas anti-nutritional factors were less affected. Boiling also decreased the trypsin inhibitor activity by 89.3%, preprocessing of grass pea for tempeh fermentation and fermentation into tempeh significantly removed large portions of the antinutritional factors in grass pea.


**Abstract**

Twenty varieties of raw sorghum (*Sorghum bicolor* /L./ Moench) seeds were treated with different traditional treatment methods including boiling, roasting, dehulling, fermentation and baking. Changes in the levels of phytic acid were determined. Minor variations in phytic acid contents among the sorghum grain varieties were observed. Boiling and roasting significantly decreased phytic acid in eleven of the twenty varieties, whereas dehulling slightly reduced the phytic acid content in only four varieties. Natural fermentation and baking after fermentation had the most pronounced phytic acid lowering effect in all the sorghum varieties studied compared to the other processing methods. Since the removal of seed coat by traditional dehulling method did not reveal any noticeable variation, the use of mechanical dehullers may help reduce phytic acid contents in sorghum grains and thus improve the utilization of sorghum.

**Key words:** Fermentation, Phytic acid, *Sorghum bicolor*(L.) Moench


**Abstract**

The effect of oral iodine supplementation on total goitre rate (%TGR) and urinary iodine excretion among school children 4 to 16 years of age was studied. In the first group (n = 57) 200mg oral iodized oil reduced %TGR from 31.6% to 17.5% and 33.3% to 24.6% in males and females respectively, while in the second group (n = 53), 400mg iodine reduced the %TGR from 34.0% to 20.8% in males and 35.9% to 24.5% in females after 13 months of intervention. This gave a relative indication that the 200mg is as effective as the 400mg in goitre reduction. In subsequent tests, the maximum urinary iodine excretion was obtained from the
groups which received two doses of iodized oil 24 hours after the intervention. A significant \( p = 0.003 \) greater increase in urinary iodine excretion was noted at 24 hours among both male and female children administered 400mg than among those who received 200mg. Measurements after 24 hours showed no significant difference between urinary iodine excretion of the two dose groups. These results suggest that: (i) 200mg is likely equally effective as 400mg for iodine deficiency disorders control and prevention among children and (ii) iodine could be administered annually rather than biannually.


Abstract
A base line survey of goiter prevalence, among population of five endemic and four non-endemic regions of Ethiopia was carried out prior to the distribution of iodated salt. Urine samples were collected from 327 subjects selected by systematic random sampling from endemic and 276 subjects in sites taken as non-endemic. The lowest mean urinary iodine excretion (UIE) value was recorded in Bure (22 µg/l/day) and the highest in Alemayya (148 µg/l/day). The highest total goiter rate (% TGR) was recorded in Sawla (55.6%) and the lowest (0.6%) in Yabello. Iodine content of drinking water was in the range of 0.4-48.5 µg/l. Iodine content of water source was correlated positively \( r=0.8399 \) with the mean UIE in all study sites. The relationship between UIE and TGR, however, indicates that sites considered as non-endemic seem to be affected by iodine deficiency. The present study results urge the need for intervention in controlling iodine deficiency disorders (IDD).


Abstract
A set of 25 high-yielding varieties of grass pea samples under trial in the institute of Agriculture Research were analyzed for their content of certain nutrients and anti-nutrients. A significant variation in the content of NPN (0.4-0.5%), NPN as percentage of total N(9.3-11.4%), total protein (22.6-28.1%), true protein (20.4-25.5%), fat (1.0-1.6%), ash (1.0-2.1%), phosphorus (380.4-511.6 mg/ 100 g), starch (32.0-43.9%), iron (6.6-18.4 mg/ 100 g), trypsin inhibitor (16783-26183 IU/g) and ODAP (172-353 mg/ 100 g) in the grass pea varieties was observed. Crude fiber (7.2-8.3%), total carbohydrate (51.8-58.5%), total sugars (5.1-6.2%) and reducing sugars (1.5-1.9%) contents of the grass pea varieties did not vary significantly. The nutrient composition and the content of anti-nutritional factors revealed that the high yielding varieties are not significantly different from local grass pea land races. The large variability obtained in most of the nutritional characters among twenty five germplasm collections suggest that it may be possible to select materials of a higher nutritional quality, lower anti-nutritional factors and desirable agronomic traits for breeding.

Abstract

Contents and forms of oxalate and calcium in some vegetables of Ethiopia were determined. On the average, the total oxalate content of spinach, Swiss-chard and beet root were 9794, 7554 and 222 mg/100 g on dry weight basis, respectively. The other vegetables studied however, contained low level of oxalate. Two fractions of oxalate were isolated a fraction in soluble in boiling water and an insoluble residue which was predominantly in the form of calcium oxalate. The water-soluble oxalates of vegetables studied account for over 50% of the total oxalate. Most of the calcium in the vegetables was in the form of calcium oxalate which is unlikely to be available to the body. Since the intake of vegetables cannot be discouraged, it is worthwhile to improve the nutritional value of these vegetables by reducing the water-soluble oxalates as it accounts for over 50% of the total oxalate content.


Abstract

In Ethiopia almost 10 million people are dependent on ensete (Ensete ventricosum (Welw) Cheesman), also known as ‘false banana’. In the Gurage area in Central Ethiopia, agronomic and nutritional aspects of ensete were studied in 60 households in six villages. Ensete is propagated vegetative and has a 6-year growing cycle during which it is transplanted three or four times. Men harvest the plants; women scrape the pseudo stem in order to separate the starchy pulp from the fiber, and pulverise the corm. The pulp is fermented and stored for up to 5–7 years in earthen pits. The yield of ensete food (ko’cho) was found to be 34 kg per plant or 9.5 tons ha⁻¹ per year. Compared with other foods grown in Ethiopia, the energy yield of ensete (6.1 MJ m⁻² per year) was higher than that of all cereals, Irish potato, sweet potato and banana, but lower than that of cassava. The protein yield of ensete was higher (11 ± 4g m⁻² per year) than all of the crops mentioned above, except for banana and Irish potato. To make ensete bread, fermented pulp is squeezed to make it drier, chopped to shorten the fibers and a 2 cm layer is baked for 15 min. Unfermented freshly harvested corm is also eaten after boiling. All foods have a low protein content (4–22 gkg⁻¹). Bu’lla, white desiccated juice collected from the pulp, is more energy rich (8.5 MJ kg⁻¹) than ko’cho (6.5 MJkg⁻¹). A dietary survey, conducted in 39 households comprising 237 persons, showed that the average daily intake of 0.55 kg ensete provided 68% of total energy intake, 20% of protein, 28% of iron but no vitamin A. Energy intake from all food consumed was very low, being only 60% of requirements, while protein intake at 107% was ample. Since ensete can be stored for years, is readily available throughout the year and can withstand dry periods, its cultivation can significantly improve household food security in highland areas prone to drought and famine.
Key words: *Ensete ventricosum* (Welw, Cheesman), Ethiopia, Cultivation, Harvesting, Yield, Preparation, Food value, Consumption, Nutritional requirements.


Doesn’t have an abstract


Abstract
Gambella is the only area where sleeping sickness is endemic in Ethiopia. Four specious if *Glossina* had been reported from Gambella out of the five specious found in the country in surveys before 1985. These are *Glossina Morsitans Ugadenisi*, *G.pallidipes*, and *G.fuscipes* and *G. tachinoides*. A tsetse fly survey was carried out in parts of Gambella owing to the fact that the area is undergoing ecological changes due to massive deforestation (because of resettlement and development programs), poaching, and introduction of domestic animals into tsetse infested parts of Gambella after 1985. Tsetse populations were sampled for one year, March 1993-April 1994, using biconical traps and hand catches. The survey has reported all the *Glossina* spp which were previously reported except *G. Morsitans Ugadenisi*. It seems that a combination of factors, such as, lack of host and increase in human population have forced *G. Morsitans Ugadenisi* to decline. This study has consolidated the fact that tsetse flies of the moritans group specially *G.moritans*, are easily affected by human interference while the palpalis group is resistant to this factor. In addition, this study has also indicated, villagation and rural development could be practiced where *G.moritans* is the only specious in a certain area to alleviate pressure on already impoverished land in parts of Africa.


Abstract
Siljo is a side dish prepared by fermenting for several days a mixture of broad bean (*Vicia faba*) flour, safflower (*Carhamus tinctorius*) seed extract, mustard (*Brassica nigra*) seeds, species such as garlic (*Allium sativum*), ginger (*Zingeber officinale*), rue (*Ruta graveolens*), bishop’s weed (*Trachyspenum ammi*) and salt. *Siljo* has been reported to have a relatively high content of protein (26%) and fat (13%) (ENI,1981). The present investigation was undertaken to determine the types and numbers of microorganisms during *siljo* fermentation.


Abstract
A study was conducted in 1993 to estimate the unmet need for family planning service in Addis Ababa. The city was categorized for the purpose of the study, based on population density. Five kebeles were selected from each category and one hundred households from each kebele and a total of seven hundred fifty women were included. Among the interviewed, the total unmet need was 49%
(368), of which 43.7% (328) want to limit and 5.3% (40) want to space. The prevalence of contraceptive use (met need) was 21.6% (162), indicating a great deal of potential users and the need for appropriate method to reach them. It was found that age, knowledge about contraception and levels of education of respondents were the most important factors affecting unmet need and there was no significant interactive effect.


Abstract
Association of DDT resistance levels with chromosome inversion polymorphism was investigated in Anopheles arabiensis samples collected from southwestern Ethiopia. The frequencies of the 2Ra, 2Rd, and 3Ra inversions in 1988 and 1990 between the DDT survivors pooled from the 3 times of exposure and unexposed controls did not differ significantly. However, for 2Rb a significant association was observed (Mantel-Haenszel chi 2, stratified for year of collection = 10.4, P < 0.001). The inversion frequency was 56% among unexposed individuals, but it was 64-92% among those surviving exposure.

1996


Abstract
Invasive Escherichia coli strains of certain serotypes invade by the same mechanism as the Shigella sp. It has been proposed that invasion of epithelial cells by EPEC strains may also occur; this is a previously overlooked property. In the present study E. coli strains isolated from patients with diarrhea or ulcerative colitis, lacking the inv plasmid mediating classical invasion, but hybridizing with probes for different adhesins, were analyzed for their ability to invade HeLa and Caco-2 cells. The majority of strains invaded Caco-2 cells to a higher extent than HeLa cells. Adhesion to Caco-2 cells was a prerequisite for subsequent invasion of the cells but EAF, eae, EA7g and other known virulence factors were not sufficient to mediate invasion. In 8/9 E. coli strains invasion was enhanced after growth under iron restriction. Growth during anaerobic conditions did not influence subsequent invasion by E. coli strains whereas 6/9 strains had their invasive ability significantly decreased after growth in the presence of 1% glucose. The invasive process was inhibited by mannose but not by lactose, fucose or galactose. Our data indicate that strains of E. coli may invade Caco-2 cells by novel mechanisms which require adhesion to the cells but which differ from those of Salmonella sp., Yersinia sp., Shigella sp. and classical enteroinvasive E. coli.


Abstract
Aflatoxin contamination of Shiro and ground red pepper samples collected from government owned good stores, retail shops and open markets in Addis Ababa was investigated. From sixty samples each of ground red pepper and shiro, 8 (13.33%) were positive for aflatoxins, respectively. Only aflatoxin B, was detected in both types of foodstuff. There was no significant difference between the proportions of aflatoxin contained in both ground red pepper and shiro samples. Aflatoxin levels in shiro and ground red pepper positive samples ranged from 100 to 500 ppb and 250 to 525 ppb, respectively. The mean levels of contamination by aflatoxin in ground red pepper was significantly higher (p<0.05) than that of shiro. Though statistically not significant, the number of positive samples were more in samples from open markets were compared to samples from government owned food stores and retail shops. Conclusions are drawn that ground red pepper and shiro traded in Addis Ababa can be considered as high risk commodities for which routine survey of aflatoxins may be necessary.

Abstract

A tempeh-type fermented product was prepared from grass pea (Lathyrus sativus L.) inoculated with the traditional Indonesian inoculums (Usar). Fermentation was found to decrease fat, fiber, available carbohydrates and starch content and increase soluble solids, total and soluble protein, non-protein nitrogen, soluble and reducing sugars, fat acidity and PH of the grass pea samples. The dry matter was reduced by about 14% during the 48 h fermentation. The lipid fraction was preferentially metabolized by the tempeh mold, contributing to almost 50% of the loss after 48 h fermentation. The present results indicate that grass pea may be converted by this fermentation technique into products of higher nutritional quality.

Abstract

The anatomy of tef[Eragrostis tef (Zucc.) Trotter] seeds and their major micro-components structural changes during the fermentation and baking processes were studied using different microscopic techniques. The mean individual mass of white and red varieties of tef seeds were 0.62±0.05 mg and 0.83±0.02 mg, respectively. The seeds were similar in size, 1-1.2 mm, and were oval. Tef grain endosperm was composed of both hard (translucent), with tightly packed polygonal starch granules, and soft (opaque), with many void or air spaces. These starch granules were 2 to 6 µm in size. The protein bodies remained as individual bodies as the seed matured. Red tef contained a pigmented material in the seed coat that gave the seed its red color. During fermentation, a few starch granules were eroded and degraded by enzymatic action. The protein bodies, however, remained unaffected. Absit contained swollen and gelatinized starch. During the baking of Injera, the starch granules were totally gelatinized and formed a spongy
starch matrix, whereas the protein bodies played no role in the formation of the matrix.

**Key words:** Dough, Eragrostis tef, Injera, tef seeds


**Abstract**
The ethanol extract of the leaves, stem bark and root bark of Bersama abyssinica were tested invitro for antimalarial activity by utilizing the inhibition of \[^3\]H-hypoxanthine incorporation into Plasmodium falciparum tine-FAC-2/Ethiopia. Assessments of approximate IC50 values were determined on the basis of two fold dilutions. All three parts of B. abyssinica showed varying degrees of antimalarial activity. The root bark was found to posses the highest activity with an IC\(_{50}\) values for the leaves and stem bark were 4 µg/ml and 11µg/ml respectively. The results are compared with the IC\(_{50}\) values of some potential antimalarial plants reported in the literature. Further studies including cytotoxicity tests and invivo antimalarial studies are suggested.


**Abstract**
An attempt was made to determine the infection rate of onchocerciasis in the resettled and indigenous communities of Asossa. A total of 931 persons consisting of 548 settlers and 383 indigenous populations, aged five years and over were examined parasitologically for the presence of onchocerca microfilaria in a skin snip, and 11.1% of the resettled population and 31.3% of the indigenous population were found infected with the parasite. The totals mean number of microfilaria per mg of skin snip at the buttock was 15.3. The clinical manifestation recorded includes skin atrophy, skin depigmentation, pruritus and presence of nodules at a rate of 15.5%, 20.4%, 44.8%, and 1.7%, respectively, among the positives. No visual impairment difference between the positives and negatives was seen and the blindness due to onchocerciasis was not detected. Black fly collection and identification around the near-by rivers indicated the presence of the anthropophilic vector *simulium damnosum* s.l. the results recorded for the resettled communities clearly indicated disease propagation in the resettled population who came from areas of the country non-endemic for onchocerciasis in 1984.


**Abstract**
The stools of 214 children under five years of age with diarrhea were examined for Cryptosporidium oocysts using the Modified Ziehl Nelson Technique. Twelve (5.6%) of the children had Cryptosporidium oocysts in their faeces. All of these were above 6 months of age and were either partially or fully weaned. There were 15 exclusively breast fed children of whom 11 were less than 6 months of age. None of these cases had the evidence of Cryptosporidial infection. The present study indicates the importance of Cryptosporidium as a possible etiologic agent in patients with diarrheal diseases. However, a comprehensive investigation is needed in order to rule out other enteropathogens.


Abstract
A survey of Schistosomiasis mansoni and Snail hosts was conducted in 1992-93 in Tigray Region. Forty accessible communities were selected at random and a total of 4786 children from elementary and junior high schools were examined for Schistosomiasis mansoni infection. Schistosomiasis mansoni positive children were found in 32 (80%) communities with prevalence’s ranging from 1% to 66% and an overall prevalence of 18.4%. Human prevalence’s of 5% and above were observed in 25 communities of which 19 are newly identified endemic foci. Significantly more males than females were infected with Schistosomiasis mansoni (P < 0.05). The age group of 10-19 years was most affected (P < 0.001). Biomphalaria pfeifferi were collected in 20 (58.8%) habitats of the total of 34 water bodies surveyed covering 18 communities. Infected snails were recovered from 12 (60%) of the 18 communities surveyed and six of these were newly identified transmission foci. The distribution of intestinal schistosomiasis in Tigray and the possible factors contributing to its spread are discussed and possible tactics of control suggested.

1997


Doesn’t have any abstract but the full text PDF is found in this link.


Abstract
Significant populations of Gram-positive, endospore-forming rods were isolated from fermenting tef dough and kocho. A taxonomic study showed that Bacillus circulans, B. firmus and B. larvae were common to both foods. The other species were, however, limited to one food or the other. B. licheniformis (56 percent) was the dominant species amongst the tef isolates while a B. larva (39.3 percent) was dominant in kocho. Most of these strains exhibited a wide spectrum of enzymatic activities and some showed antimicrobial effects against certain food-associated bacterial pathogens. Biochemical features of these bacilli led to the suggestion that they may play active metabolic roles and enrich the substrates for the succession and dominance of the lactic acid bacteria (LAB) which are essential for the characteristic fermentation of the two foods. Further studies are recommended to establish the effect of this group of bacteria and their metabolic products on human health.

**Key words:** Enset, Injera, Kocho, Tef dough, Traditional lactic acid fermentations.


**Abstract**

To assess the knowledge, attitude and behaviour of college students towards acquired immunodeficiency syndrome (AIDS), 1214 students from six colleges in Addis Ababa were interviewed by means of a questionnaire. The results indicated that, although college students in general are well informed about AIDS, there are gaps in their knowledge of some vital information. A relatively low level of awareness about some vital information about the risk factors and the modes of transmission of AIDS was revealed by the study. Similarly, poor attitude and practice towards protection from AIDS was also documented. However, their attitude towards the disease and their protective behaviours did not match the relatively high level of knowledge they have about the disease. Sex, religion, or being in one faculty or another did not show significant difference. But, knowledge about AIDS was found to increase with age. The results of this study were almost similar to the studies conducted on college students of other countries. Four hundred seventy four (39%) students considered themselves as a high risk group and 219 (18%) believed that AIDS is not their problem. More than 315 (30%) admitted that they have one or more lovers and the highest proportion 802 (66%), reported that they did not use condom at all. Radio and television, followed by the print media were the students' best sources of information on AIDS. It is concluded that although college students would have a relatively better access to information on AIDS, compared to the general population, this does not seem to have brought about the necessary behavioural changes required for protection against AIDS. Therefore, the need for offering a more focused AIDS education to college students, much more than what is being currently done through general public information, is justifiable.

**105. Derege Kebede, Melaku Umeta, Elizabeta Wuhib, Kelbessa Urga and Walter C. Willett. The validity and reproducibility of a semi-quantitative food frequency**
A valid assessment of diet is crucial both for understanding disease causation and for launching control programs. Although there have been a number of studies that have evaluated and demonstrated the reproducibility and validity of food frequency questionnaires (FFQs) in the developed world, to our knowledge there have not been published reports of such studies from Africa. The purpose of the present study was to assess the validity and reproducibility of a 98-item FFQ used in a cohort study to evaluate dietary vitamin A intake as a risk factor for acute lower respiratory infections in children under five years of age in Addis Ababa, Ethiopia. Serum retinol determinations and seven days of 24-hour diet recall were compared with data from the FFQ completed three times at six month intervals in a randomly chosen sub-sample of 100 children from the larger cohort. Reproducibility was high for all nutrients between the second and third FFQ. The correlations ranged from 0.36 for folic acid to 0.63 for preformed vitamin A. The correlations between FFQ1 and FFQ2 ranged from 0.23 for total vitamin A to 0.39 for preformed vitamin A. Correlations between the mean of the three questionnaires and serum retinol were 0.22 for intake of total vitamin A, 0.25 for preformed vitamin A and 0.15 for provitamin A. All nutrient estimations from the multiple recalls were not appreciably correlated with serum retinol levels. Correlations between the multiple 24-hour recalls were 0.21 for total vitamin A, 0.11 for preformed vitamin A, 0.16 for provitamin A, 0.12 for folic acid and 0.27 for total caloric intake. Our results suggest that 98-item FFQ performs reasonably well for categorizing children by levels of vitamin A intake in Addis Ababa. The results also indicate that the seven-day multiple 24-hour recalls were inferior to the questionnaires in estimating long-term vitamin A intake in children and are probably best avoided as gold standard measure in this setting.

Antifertility effect of Jatropha Curcas L. seed in guinea pigs. 

A crude seed extract of *Jatropha curcas* was studied for its claimed anti-fertility effect. The extract was orally administered to matured female albino guinea pigs. It was found to reduce the number of births. This was further confirmed by the anti-implantation and abortifacient effects of the extract observed in this study. The extract was also found to prolong the oestrus cycle of guinea pigs. The diestrus phase was significantly increased, while the oestrus phase was shortened. The weight of the uterus was shown to reduce in animals treated with the extract, while that of the ovaries did not show a significant change from that of the control. These observations suggest that the seeds of the plant possess anti-fertility activity.

Nutritional and antinutritional characteristics of Anchote (Coccinia abyssinica) 

A crude seed extract of *Coccinia abyssinica* was studied for its nutritional content. The extract was orally administered to matured female albino guinea pigs. It was found to reduce the number of births. This was further confirmed by the anti-implantation and abortifacient effects of the extract observed in this study. The extract was also found to prolong the oestrus cycle of guinea pigs. The diestrus phase was significantly increased, while the oestrus phase was shortened. The weight of the uterus was shown to reduce in animals treated with the extract, while that of the ovaries did not show a significant change from that of the control. These observations suggest that the seeds of the plant possess antinutritional activity.
Abstract
The whole and peeled samples of anchote (Coccinia abyssinica) were analyzed for their nutrient and anti-nutrient contents. The protein, starch, total sugars, reducing sugars, vit-A, and vit-B contents were higher in peeled anchote than in whole anchote samples. The phosphorous, potassium, sodium, calcium, magnesium, iron, zinc and copper contents of whole and peeled anchote were determined and peeling of anchote reduced the contents of calcium, potassium, phosphorous, iron and magnesium by 5%, 8%, 16%, 16%, and 19%, respectively. The phytic acid, oxalic acid and tannin contents of whole anchote were higher than those which were peeled by 20%, 22% and 29.6%, respectively. There were no detectable trypsin inhibitor activities in both samples of anchote. Oxalic acid in both anchote samples exists as insoluble oxalate and no water soluble oxalate was detected. As it is observed from the analysis made, anchote contained good nutrient composition with good supplements of vitamins and minerals. Its anti-nutritional contents are probably of little nutritional significance and they may be still minimized or destroyed during cooking processes.


Abstract
Tef flour mixed with water in a 1:1.6 (w/v) ratio was allowed to ferment at 22°C for 96 hrs by the action of endogenous microflora in the batter. After 96 hrs total protein content in tef dough decreased by 12% whereas the NPN, free amino acids, free amino acid nitrogen, soluble protein and fat acidity increased 7.4-, 7.0-, 6.6-, 7.7- and 10.7- fold, respectively. Fermentation also resulted in significant drop in pH and sharp rise in titratable acidity of the 96 hrs fermented dough. Iron, phosphorus and calcium decreased by 43%, 35% and 41%, respectively, in the dough fermented for 96 hrs. Phytic acid, tannins and trypsin inhibitor contents were reduced by 72%, 55% and 69%, respectively. In ersho, the liquid portion drained off from the fermented dough, total protein, NPN, free amino acids, iron, calcium and phosphorus increased significantly whereas total and reducing sugars decreased during the two days of fermentation. The pH of ersho dropped slightly, but the titratable acidity increased by 35%. These results could provide useful indices for the improved evaluation of tef fermentation.


Abstract
Tempe was prepared by co-fermenting different proportions of kocho flour with grass pea using the traditional inoculum, Usar. The nutritive quality of Tempe prepared from kocho-grass pea (20:80; 25:75; 30:70; 40:60; 50:50) was determined. The protein crude fibre and ash content increased significantly, while carbohydrates decreased slightly. The fat content of Tempe made from all the kocho-grass pea combinations decreased by about one third. Soluble and
reducing sugars increased by 2.6- and 2.9-, 4.8- and 9.5- and 7- and 10-fold, respectively, in 30:70, 40:60 and 50:50 kocho-grass pea combinations. Free amino acids and non-protein nitrogen similarly increased 8.5- and 24-, 23- and 7.5- and 6.5 and 20-fold, respectively, whereas minerals remained unaffected in 20:80, 25:75 and 30:70 kocho-grass pea combinations. Fermentation also significantly decreased the phytic acid and trypsin inhibitors but, increased tannin contents of the Tempe. Co-fermentation of kocho-grass pea combinations into Tempe greatly improved the nutrient of kocho in terms of protein, fat and ash contents. The Tempe could be used for supplementary feeding. A fermentation scheme was therefore, developed for the production of an enriched product in which 40% to 80% grass pea was fermented with kocho flour for 48 hr.


Abstract
Biochemical changes of fermenting enset were studied. After seven weeks fermentation total protein, ash and total carbohydrates decreased by 15%, 16% and 34%, respectively. Significant (p<0.05) reduction in iron (15%), phosphorus (29%), calcium (51%), starch (23%), soluble sugars (93%), reducing-sugars (84%) and available carbohydrates (51%) were recorded. Free amino acids and non-protein nitrogen increased by 6- and 1.6-fold, respectively. The pH of the fermented mash fell from an initial value of 5.7 to 3.8 with a concomitant sharp rise in titratable acidity resulting in accumulation of organic acids. The predominant organic acids were lactic, iso-valeric and n-butyric acids followed by n-valeric and acetic acids. Other volatile fatty acids and ethanol were formed in lesser quantities. Fermentation of enset also resulted in significant reductions in tannins and trypsin inhibitors whereas oxalic acid remained unaffected.


Abstract
Tef flour was fermented at room temperature for 4 days and then baked into Injera. Kitta was prepared without further fermenting the tef flour. The HCl-extractability of minerals in tef kitta increased marginally. Fermentation decreased phytic acid, increased inorganic phosphorus and HCl-extractability of phosphorus, iron, calcium and zinc; the extractability increased with an increase in the period of fermentation. The level of phytic acid was found to have a significant negative co-relation with HCl-extractability of minerals of Injera. The phytate concentrations and phytate: zinc molar ratios in kitta were similar to that of the raw seeds, but much higher than those of Injera. Improved extractability of minerals due to fermentation in tef is particularly important from a nutritional view point as consumption of such food may be instrumental in mitigating mineral deficiencies, and in improving the nutritional status of population consuming such food.

Abstract
The in vitro availability of iron and zinc in fermented white and brown tef atmit (gruel) was studied. Fermentation was carried out naturally and using combinations of single starter cultures of lactobacilli namely; L. casei, L. fermentum, L. plantarum and L. pentosaceus. Naturally fermented white and brown atmit had phytic acid levels reduced by 47.6 and 45% whereas mixed culture fermented atmit had reduced the phytic acid levels by 73 and 71%, respectively. Increase in zinc solubility and reduction in phytate: zinc molar ratios were significantly higher (p<0.05) in mixed culture fermentation than in naturally fermented tef atmit. Natural fermentation increased ionizable iron by more than six-fold whereas, it increased by an average of 68.4 and 78.6%, respectively, in white and brown tef atmit following mixed cultures of lactobacilli fermentation. Ionizable iron in both naturally and mixed cultures of lactobacilli fermented tef atmit was significantly higher (p<0.05) in brown tef compared to white tef. Natural and mixed cultures of lactobacilli fermentation improved native ionizable iron and soluble zinc in tef gruels (atmit). Unfermented tef atmit as a weaning food may not be necessarily beneficial for iron and zinc bioavailability.


Abstract
The host preference of indoor resting Anopheles arabiensis has been determined using a direct enzyme linked immunosorbent assay. A total of 611 specimens, 258 from human dwellings, 179 from mixed dwellings, and 174 from cattle sheds, were examined. The proportion of human blood meals identified was highest from mosquitoes caught in human dwellings (91.5%), followed by those from mixed dwellings (20.2%) and cattle sheds (3.5%) (P<0.0001). The smaller proportion of human blood meals from mixed dwellings suggests that cattle may protect humans from A. arabiensis.

Keywords: malaria, plasmodium spp., anopheles arabiensis, blood meals, cattle, Ethiopia


Abstract
OBJECTIVE: To obtain current, representative information on current drug resistance patterns in Addis Ababa, Ethiopia.

DESIGN: A cross-sectional study whereby 167 isolates were tested for susceptibility to the anti-tuberculosis drugs commonly used in the country (isoniazid, thiacetazone, rifampicin, streptomycin and ethambutol). All hospitals, health centers and 6 of the 9 clinics in Addis Ababa were included in the study.
RESULT: Overall primary drug resistance was found to be 15.6% (26/167). Primary resistance to two or more drugs was 7.2% (12/167). The highest rate of primary resistance was to streptomycin (10.2%) followed by isoniazid (8.4%). Resistance to rifampicin was low (1.8%, 3/167) and to ethambutol nil. Multiple drug resistance in combinations with rifampicin was low.

CONCLUSION: To prevent further development and spread of resistance, universal use of standard treatment protocol, control of the circulation of anti-tuberculosis drugs, training of health workers, expansion of strictly supervised short-course treatment and establishing a nation-wide and regular surveillance system are recommended.

Key words: Drug residence, Tuberculosis, Ethiopia.


Abstract
An attempt was made to establish Ethiopian isolates of Plasmodium falciparum in tissue culture flasks. Two lines, FCA-1 and FCA-2, were derived from two patients infected with falciparum malaria in North and South Shewa, Ethiopia, respectively. Parasites were initiated into culture in tissue culture flasks. Both lines grew very slowly for the first four weeks but increased their multiplication rates and became established between the 5th and 7th weeks in culture. Both lines produced gametocytes. Infected red blood cells cryopreserved after five weeks were easily recovered. Sufficient parasite materials have been preserved in liquid nitrogen for later use and/or for supply to researchers in other laboratories.


Abstract
Injera, pancake, type sour bread, was prepared by co-fermenting kocho with barley to determine its nutrient composition and the microorganisms involved in the fermentation process. The predominant organisms identified were Lactobacillus, Bacillus and yeasts. The fermentation process was characterized by the fall in pH from 5.0 to 4.2 and rise in the titratable acidity from 0.20 percent to 0.50 percent during 96 hrs of fermentation. The co-fermentation of kocho with barley increased the protein content of the fermented Injera by 2.6-fold. The Injera prepared from co-fermented dough of kocho and barley was found to be acceptable to Ethiopian consumers and had very good keeping qualities. A fermentation scheme was therefore developed for the production of Injera with improved protein content in which kocho and barley flour were fermented for 96 hrs with barley flour.

Key words: Barley, Cereals, Co-fermentation, Dough, Injera, Kocho.


Abstract
While conducting a survey on sleeping sickness during 1989-92 in Gambella, South western Ethiopia, and microfilariae of *Mansonella perstans* were detected in the blood of the indigenous population, the Anuaks (1%), and the refugees from Southern Sudan (4.1%). No blood microfilarial infection was detected in resettles, which arrived in the area from drought affected regions of the country during the 1985/86 resettlement program. Among the diagnostic methods applied, nearly twice more microfilaraemic cases (4.1%) were detected by the Miniature Anion Exchange Centrifugation Technique (M-AECT) while only (1.9%) were detectable by Microhaematocrit Buffy Coat Technique (MHBCT) among the refugees. Using the conventional blood film methods (thin and thick smears) only fewer positive cases (1.0%) were detected compared to the above two techniques. Besides a known standard of diagnostic methods for blood filariasis, however, the MHBCT seems preferable as field diagnostic technique. Because it is more rapid, simple to operate and does not necessitate as much advanced preparation and sterile condition as M-AECT, and could be a potential diagnostic tool for blood microfilariae. There is a significant difference (P<0.01) in age groups 15-30 years among Anuaks and refugees. There is no significant difference (P>0.01) in other age groups and sexes among Anuaks and refugees. However, there is a significant difference (P<0.01) in over all positivity among Anuaks and refugees.


**Abstract**

Surveillance of human trypanosomiasis was carried out in Gambella, an endemic region of south-western Ethiopia. The study was conducted in March 1993, October 1993 and April 1994 with the major objective of investigation of the sleeping sickness infection and its vector status in the area. In the present survey no parasitoligically confirmed case was detected. The main vectors of the disease, *Glossina pallidipes* and *G. tachinoides* in wooden savanna and forest area and *G.fuscipes* in riverain vegetation, were commonly encountered. Even though there were no parasitologically proven cases of sleeping sickness infection due to prolonged combined effect of ecological, climatic and human interference, the presence of potential vectors, *Gassolina* species specially along the major river banks, ecological rehabilitation of the area to its previous conditions and the inversion of the game animals might give way to the reappearance of the parasite, T. b. rhodesiens. Thus, regular active surveillance of the endemic region is of a great importance to control the disease at an early stage before the appearance of epidemics which could be more costly financially as well as in human life. Specific ecological requirements and feeding habits of *Glossina* species, especially of *G.moritans*, which was not found in this survey, need further investigation. A comprehensive study on community awareness about sleeping sickness and its vector is also recommended to support future control measures.

Abstract
It is important to know the normal limits for each test in each laboratory. In most cases the normal limits established by others have been adopted and used as reference values. In view of this an attempt is made in this paper to establish ranges of clinical normal limits for adults. Eight determinations SGOT, SGPT, ALP, BILD, BILT, FBS, UREA, and CREATININE were included in the study. Normal limits were established based on a validated statistical method. Comparison was made with adopted normal limits in use in laboratories. For most tests notable differences in limits, particularly from the side of abnormal values, have been observed which resulted in high misclassification of laboratory test values.


Abstract
A cross-sectional study was conducted in October, 1993 to determine the prevalence of vitamin A deficiency in Agebe Woreda in Tigrai `Kellel' (Region) of Ethiopia. A total of 678 children aged between 6 months and 6 years were examined for signs of xerophthalmia. In 7.8% of the children a history of night blindness (XN) was reported. Bitot's spots were seen in 3.4% of the children with a higher prevalence rate in males than in females (P<0.01). Anthropometric measurements were made on 662 of the children. There was a higher prevalence of stunting (42.6%) than wasting (8.0%) with an additional 11.3% of the children being both stunted and wasted. No association was observed between morbidity and occurrence of sign of xerophthalmia. The woreda is a mono-crop area and has been affected by recurrent drought. On the basis of the cut-off points set by WHO and the International Vitamin A Consultative Group, the problem of vitamin A deficiency in the Woreda is of public health significance. Urgent and continued intervention programmes (mainly supplementation with mega-dose of vitamin A and food diversification through intensive health education as well as horticultural development) are highly recommended.

1998


Abstract
The in vivo anthelminthic activity of the extract of the seeds of Glinus lotoides was determined in Albino mice infested with Hymenolepis nana worms. The results indicate that the extract of the seeds of G. lotoides are active against H.
*Hymenolepis nana* worms when given both as single and multiple doses. The extract, however, was more effective when administered as multiple doses than as single doses. In a single dose treatment, higher concentration of the extract (as much as 3.3 g/kg, i.e., 100 mg per 30 gm mouse) was required to expel all the worms, whereas the total multiple dose that cured the mice completely amounted to only 0.6 g/kg (i.e., 3 mg a day for 6 days per 30 g mouse). In the control experiments, a single dose of *paraziquantel* (0.6 mg per mouse) resulted in 100% cure within 48 hrs while a single dose of *niclosamide* (0.5 mg) showed 73.3% efficiency. In order to determine the maximum tolerated dose, various concentrations of the extract were orally non-lethal in doses as large as 100 mg per 30 g mouse, which is equivalent to 3.3 g per kg. The LD$_{50}$ of the extract was found to be around 4.5 g per kg (150 mg per 30 g mouse).

**Key words:** *Glinus lotoides*, *Invivo anthelminthic activity*, *Hymenolepis nana*, *Sub-lethal dose*, *Niclosamide*, *Praziquantel*.


**Abstract**

*Escherichia coli* strains isolated from faecal specimens of 108 Ethiopian patients with acute watery diarrhea (n = 30), acute bloody (n = 9), and persistent (n = 25) diarrhea, and from 44 patients who recently had recovered from diarrhea were analyzed for the presence of virulence factors using DNA probes, and for adhesion to HeLa cells. Eighty-two patients were under five years of age. *Enterotoxigenic E.coli* (ETEC) was most frequently isolated (63 patients, 58%). Eighteen of the ETEC strains also hybridized with probes for EPEC adherence factor (EAF) and Enteroaggregative (EAgg) adherence. *Enteroaggregative E. coli* (EAaggEC) were more frequently isolated than EAF positive E.coli, and more frequently from patients with persistent diarrhea (10/25) than from patients with acute diarrhea (11/39). In total, 103 of the patients harbored faecal *E. coli* which hybridized with one or more of the virulence probes. Haemagglutination of one or more erythrocyte species was expressed by 65/70 strains. Using monoclonal antibodies to Colonization Factor Antigen I and *Coli* Surface antigens 1-5, only 18/66 strains were found to produce one or more of these adhesions and no more than 15 of 43 ETEC strains were agglutinated by the antisera to these adhesins. Forty-nine strains adhered to HeLa cells in autoaggregative (23 strains), localized (17 strains) or diffuse (9 strains) pattern. The study shows that *E.coli* strains carrying genes for the different virulence factors are prevalent in Ethiopia. Testing for the presence of these virulence factors, as well as for putative colonization factor antigens, should be included in epidemiological studies in this area.


**Abstract**
Both acute and chronic toxicity tests were carried out for Jatropha curcas and Ricinus communis seed extracts; two of the Ethiopian traditionally used antifertility herbs. The seed extracts were administered orally to mice (for acute and chronic toxicity tests) and to rats (for hepatorenal toxicity tests). Autonomic and other toxic symptoms were observed only at higher doses of both seed extracts. Oral LD50s of Jatropha curcas and Ricinus communis seed extracts were found to be 5.25 g/kg and 0.24 g/kg, respectively. Furthermore, both seed extracts showed no toxicity at the effective antifertility doses when administered daily for 90 days. No sign of toxicity was observed even at 10x effective antifertility doses given for the same period. Ricinus communis did not show any sign of hepatorenal toxicity at the antifertility dose as well as at 5x and 10x the antifertility. Jatropha curcas, however, showed some deterioration of the hepatorenal function at 10x the antifertility dose, but this deterioration was observed neither at the antifertility dose nor at 5x this dose. From the present study, it can be concluded that both seed extracts are reasonably safe at their effective antifertility doses.


Abstract

OBJECTIVE: To estimate the age and sex-specific prevalence of HIV infection in the population of Addis Ababa, Ethiopia.

DESIGN: Two-stage cluster sampling of the population aged 0-49 years of Addis Ababa, using kebeles (urban dwelling associations) as clusters.

METHODS: The sera used for this study were collected in an earlier study (1994) on the rate of acquisition of antibodies against measles, rubella, and hepatitis B. After separate approvals were obtained from the institutional ethics committees, sera were tested by enzyme-linked immunosorbent assay confirmed by Western blot. Age- and sex-specific HIV prevalence rates were estimated. The prevalence of HIV in men and women over 15 years of age was compared by calculating age-standardized HIV prevalence, using the age distribution of the census population as the standard. A time-dependent catalytic model was used to obtain crude estimates of HIV incidence from age-prevalence data.

RESULTS: A total of 3853 sera were available for analysis. The prevalence of HIV in adults was 6.0% [95% confidence interval (CI), 4.5-7.4%] for men and 6.9% (95% CI, 5.3-8.5%) for women, with peak prevalence in the 25-29 year age group of 16.3 and 11.8%, respectively. After standardization for age using the direct method, the HIV prevalence ratio comparing adult men with women was 0.97:1 (95% CI, 0.70:1 - 1.35:1). Three children aged less than 5 years were HIV-positive. The prevalence of HIV among adults ranged from 0-21.3% in different clusters, indicating the heterogeneity of the spread of HIV in the city. HIV prevalence estimates among the antenatal clinic patients of Addis Ababa in 1996 far exceeded the estimates obtained during the community survey, particularly in
the youngest age group (15-24 years). Estimates of HIV incidence (per susceptible person per annum) for the age group 16-22 years ranged from 1.3-2.25% for men and from 2.1-2.4% for women.

**CONCLUSION:** By 1994, a substantial proportion of the adult population of Addis Ababa was infected with HIV. Promotion of behavioral changes and the control of sexually transmitted diseases should be strongly supported to limit the spread of the HIV epidemic in Ethiopia.

**Key words:** HIV-1, Age-specific sero-prevalence, Population surveillance, Ethiopia, Africa.


**Abstract**

A known population from each of a 24h culture of Bacillus cereus, Pseudomonas aeruginosa, Salmonella spp., Shigella spp., Klebsiella spp. and Staphylococcus aureus was inoculated into tef flour–water/kocho–water mixtures in screw-capped flasks and allowed to ferment for 30h at room temperature (18–21°C). The flasks were then heat-treated. Cultures of the test bacteria were inoculated into tubes containing graded volumes of 30-h-fermented tef dough/kocho extracts which had been heat-treated at 45, 61 and 80°C in assay broth containing aqueous extracts from Injera and aradisame. They were incubated for 24h at 32°C and optical densities determined. Populations of the major indigenous bacteria, yeasts and moulds in fermented tef dough (30h), kocho samples, Injera and aradisame were determined from other control portions of the same samples. Higher temperature (80°C) heat-treatment promoted the inhibitory potential of extracts from dough’s of both foods as compared with lower temperature heat-treatments (45 and 61°C). Asporogenous test bacteria were affected more than the spore-formers. Better efficacy of extracts from Injera and aradisame suggested improved antimicrobial properties of the baked products than in dough’s. Heat of baking inactivated all vegetative cells although spores of B.cereus, the yeasts and moulds survived the heat (100°C) applied for 5min. The c.f.u./g of food for B. cereus was below the disease-causing level (0.5×101 and 1.5×103, in Injera and aradisame, respectively). Actual baking temperatures in homes are higher than the ones used here; if post-baking contamination is minimized or prevented, the products would be microbiologically safe with respect to the asporogenous pathogens when served fresh. Further studies on aflatoxins and improved storage conditions for kocho are recommended.

**Key words:** Aradisame, Baking, Heat, Enset, Ventricosum, Eragrostis tef, Inhibition, Injera, Kocho, Lactic acid fermentation, Tef dough


**Abstract**
In a taxonomic study of the known *Pediococcus* species, together with 116 isolates from fermenting *tef* dough and fermented *kocho* using a PCR-based RAPD procedure, all the different species developed well differentiated agarose gel electrophoresis profiles. Analyses of the images with the Pearson product moment correlation coefficient (r) and upgma clustering algorithm in the GelCompar version 4·0 software gave a distinct identification scheme within and between type strains and food isolates of *Pediococcus* species. The procedure is simple, rapid for grouping of isolates, applicable to all species of pediococci and particularly useful for differentiating between strains of *Ped. pentosaceus* and *Ped. acidilactici*.


**Abstract**

Previous studies in other African countries have shown high prevalence’s of *Isospora belli* and *Cryptosporidium parvum* infections in acquired immunodeficiency syndrome (AIDS) patients with chronic diarrhea. However, there is lack of information regarding these infectious agents in Ethiopian AIDS patients. Thus, this investigation has been aimed at determining the prevalence of *Cryptosporidium* and other related gastrointestinal parasites in AIDS patients with diarrhea in seven Addis Ababa hospitals. Stool specimens from 246 clinically diagnosed AIDS patients were parasitologically screened for parasitic infections constituting HIV-negative with diarrhea and HIV-positive without diarrhea control groups. A variety of intestinal protozoa and helminths were found in 50% of AIDS patients and 42% of the controls. *Cryptosporidiosis* was detected in 38(25.9%), *Isosporiasis* in two (1.4%), and *Blastocystosis* in one (0.7%) of the AIDS patients with diarrhea. The occurrence of cryptosporidiosis among the AIDS patients and possible explanation of the increasingly high study subjects with diarrhea but without identifiable parasites is discussed.


**Abstract**

A cross-sectional drug dispensing survey was conducted in eight of the Southern Nations, Nationalities and Peoples Regional State’s (SNNPR) hospitals during 1995-1996. The aim was to see whether dispensing practices conform to the acceptable norm in the region. The finding revealed that 62.5% of all indicators and 100% of one indicator do not fall within the optimum range recommended by the International Network for Rational Use of Drugs (INRUD) research team. These include low dispensing time (18-58 sec) in three of the hospitals, low percentage of drugs actually dispensed (64-83%) in four of the hospitals and low percentage of drugs adequately labeled in all of the hospitals (0-92%) with a median of 37%.

**Key words:** Drug dispensing, Drug labeling, Rational drug use.

Abstract
A cross-sectional descriptive study was conducted to determine the prescribing indicators and the underlying factors influencing prescribing in eight hospitals, in Southern Ethiopia. The results of the quantitative survey revealed that 90.6% of the indicators do not fall within the accepted optimum range. The findings indicated the use of polypharmacy, over-use of antibiotics and injections; with regional average of 2.2 drugs per encounter, percentages of antibiotics 50% (range 4%-64%) and percentage of injections 15% ( range 4%-43%). The qualitative survey conducted simultaneously identified acquired habits (75.9%), peer norms and relations (66.7%), lack of drug information (66.7%) and patient demand (64.8%) are among the major underlying factors for the irrational prescribing of drugs. The study has revealed that there is irrational prescribing of drugs for which the underlying factors were determinant to have an influence in the prescribing behaviour. An intervention strategy that is educational, managerial and regulatory in nature is highly recommended to reduce the degree of irrationality to off-set from drug misuse in the region so as to comply with the accepted norms.


Abstract
This is the first preliminary appraisal report on drug use pattern in private drug retail outlets in Southern Nations, Nationalities and Peoples Region. Community pharmacies and other retail outlets have always been the major reservoir of drugs in the health care system worldwide. Pharmacy employees are consulted for health advice on problems of all kinds, and remedies are sold or dispensed with almost every transaction. Some of the remedies are safe and effective when used correctly but otherwise can be dangerous. The results of the baseline study revealed that 94% of the retailers dispense drugs under dose; 74% dispense drugs obtained from illegal sources; 68% handled drugs beyond their level of competence; 20% dispense expired drugs, and 63% of the retailers provide medical services against regulations. Irrational use of drugs in the private retail outlets in the region is obvious as depicted by the results of this study. It is recommended that formulation and implementation of a new drug legislation and regulation in addition to the educational intervention will help in promoting rational practice.


Abstract
All documented fine needle aspiration cytology diagnosis were collected from the file of pathology laboratory of EHNRI of a period of one year (July 1, 1995- June
30, 1996) and were analyzed. The result revealed five leading diseases according to their mode of occurrence. Tuberculosis is found to be the most rampant of them all (43.9%) followed by fibroadenoma of the breast (10.1%). Carcinoma of different tissues (5.5%) thyroid and skin cysts (5.3%) and nodular colloid goiters (2.9%). Others occurred less frequently. The organs most frequently affected by tuberculosis are cervical, axillary and inguinal lymph nodes (91.8%) followed by skin (3.5%). Testicular (2.2%), breast (7.53%), thyroid (0.9%) and parotid gland (0.4%). The age distribution of diagnosis revealed that both fibroadenomas of the breast and carcinomas of different tissues seem to affect younger age groups and tuberculosis affects all age groups suggesting serious public health problem.


Abstract
A cross-sectional study was conducted in children below the age of 14 years in Torbayo village, west Hararghe, during the month of February 1991, to determine the prevalence of Xerophthalmia. Every third household with children below 14 years (n = 373, 32.3%) was randomly selected and the children were convened in a central place for examinations of the signs and symptoms of Xerophthalmia, morbidity and nutritional status. A total of 132 children were found to have Xerophthalmia, of which 70(18.8%) had night blindness and 55(14.7%) had Bitot’s spots. According to WHO, this appears to be of public health significance. Males were affected slightly more than females (4.2% vs. 3.9%), and school children were noted to be affected more than pre-school children. Though the level of wasting and stunning which were 39(10.5%) and 133(35.7%), respectively, appear to be high no significant association was observed with the clinical manifestation of vitamin A deficiency. In conclusion, the prevalence rate of X1B of 14.7% is amongst the highest rates reported in the world and therefore, we recommend periodic vitamin A supplementation until dietary intervention takes place.


Abstract
The phytate: zinc and phytate x calcium: zinc molar rates of selected Ethiopian diets were determined. The effect of these molar ratios on zinc solubility (index of bioavailability) from the selected diets (porridge, gruel, sour dough bread, yeasted bread, Kitta and Injera) was estimated using the in vivo method. The mean phytate: zinc and phytate x calcium: zinc molar ratios of the unfermented diets were greater than 10 and 0.5 M/kg, respectively, while Injera and sourdough bread exhibited ratios less than the suggested critical values of 10 and 0.5 M/kg, respectively. Fermented gruel had phytate: zinc and phytate x calcium: zinc molar ratios slightly greater than the critical values. Diets with phytate: zinc and phytate x calcium: zinc molar ratios exhibited relatively higher bioavailability of zinc. Thus, the molar ratio phytate: zinc and phytate x calcium: zinc predicts the adequacy of zinc nutrure in a given diet.

**Abstract**

Tef atmit (thin gruel) was fermented by mixed cultures of lactic acid bacteria (LAB), namely, *Lactobacillus casei*, *Lactobacillus plantarum*, *Lactobacillus fermentum* and *pediococcus pentosaces*, at 30°C for 2 days. The fermentation brought about a significant increase in inorganic phosphorus, and HCl-extractability of phosphorus with a corresponding decline in phytic acid content of tef atmit. The content of phytate to zinc molar ratio, an index of zinc bioavailability, in the fermented products decreased corresponding to a decreased in phytate acid. Fermentation also improved the HCl-extractability of iron, calcium and zinc in atmit. Reduction in phytic acid and phytate to zinc molar ratio and increase in inorganic phosphorus was more pronounced in atmit fermented with *Lactobacillus casei* + *Lactobacillus plantarum* compared to the other cultures. Unfermented tef atmit as a weaning food may not be necessarily beneficial for iron and zinc bio-availability.

**Key words:** Fermentation, HCl-extractability of minerals, lactic acid bacteria, phytate, tef atmit


**Abstract**

The quantitative changes of phytate during the preparation of the traditional sour dough bread (*Difo dabbo*) and yeast-raised bread were investigated. Raw materials chosen for investigation were flour of high extraction, soy-fortified wheat flour (*Dubbie flour*), and white flour. The content of phytic acid was determined in all components (raw materials), intermediate products (dough’s), and bread. It was found that pH was the most important factor in reducing phytic acid content. The most marked phytate reduction of 96%-100% occurred in bread made with soy-fortified wheat and white flour sour dough’s. Reduction of phytate content in bread made from wholemeal wheat flour sour dough was relatively low. The phytate content in yeast-raised bread was reduced at most to 39% of the initial amount. The study results showed that it should be possible to bake traditional sour dough bread (*Difo dabbo*) from whole meals with a low phytic acid content by using the sour dough procedure. Such traditional sour dough bread with very low levels of phytate may be a good source of iron, calcium, and zinc since phytate is known to interfere with the absorption of these minerals.


**Abstract**

Traditional sour dough bread (*Difo dabbo*) was prepared from wholemeal wheat flour, soy-fortified wheat flour (*Dubbie flour*) and white flour. Yeast-raised bread was prepared from Dubbie flour by the straight-dough process. Sour dough
fermentation of bread significantly reduced phytic acid content and increased the HCl-extractability of calcium, iron, zinc and phosphorus. The extractability increased with an increase in the period of fermentation. Higher extractability of the minerals was obtained in white flour sour dough bread. Wholemeal wheat flour sour dough bread exhibited relatively lower extractability of the minerals compared to the other two sour dough breads. Significantly (p<0.05) lower values for HCl-extractability of minerals were observed in bread prepared by the straight dough process. The sour dough fermentation is an effective method for improving HCl-extractability and possibly the bioavailability of minerals which helps to prevent and ameliorate minerals deficiencies and improving the nutritional status of people consuming such food.

Abstract
Bioavailability of iron from tef (Eragrostis tef) was studied using anemic rats by hemoglobin regeneration efficiency and apparent iron absorption. The bioavailability of zinc in tef prepared in the form of kitta and Injera was evaluated with a rat bioassay, using the slope ratio and log_{10} total femur zinc or weight gain verses added zinc to the diets as response parameters. Diets were formulated by mixing kitta or Injera prepared from tef with semi-synthetic iron or zinc-free basal diets. Mean hemoglobin iron gain was lower in the groups fed kitta compared with Injera fed groups. The respective mean hemoglobin regeneration efficiency and apparent iron absorption were 27.84% and 25.34% for anemic rats when the kitta diet was fed and 76.85% and 79.40% when the Injera diet was fed. For weight gain, slope ratios relative to ZnSO_{4} were 37.1% for kitta and 77.4% for Injera. For log_{10} total femur zinc, slope-ratios relative to ZnSO_{4} were 30.2% for kitta and 69.8% for Injera. The phytic acid and phytate: zinc molar ratio of Injera was 72% lower than that of kitta. The relative biological value (RBV) of iron and zinc in kitta was lowest compared to that of Injera. The study suggests that natural lactic acid fermentation increased the RBV of iron and zinc.

Abstract
Indoor resting blood-fed anopheline mosquitoes were collected from five localities in Ethiopia. Cytogenetic and blood meal determinations were conducted. Anopheles arabiensis was the only sibling species identified in all of the study localities. Para centric chromosomal inversion polymorphisms were observed on 2R and 3R arms. The highest cattle-fed percentage was from those mosquitoes collected from cattle sheds (47.5%) followed by mixed dwellings (3.9%). Statistically significant correlation (r=0.94, p<0.001) was observed between the frequencies of 3Ra inversion and cattle feeding.

**Abstract**

Laboratory reared *Glossina morsitans* were fed on immobilized swiss Albino Mice in an attempt to compare detectability of blood meal preserved as filter paper smears or as whole intact dried specimens. Both techniques showed similar trends with regards to absorbance values. Moreover, the inclusion of 25% ethanol seems to have improved the detection of the blood meal in both cases. Blood meals preserved on filter paper deteriorate rapidly with time. Therefore it would be advantageous to preserve insects as dried whole specimens if the identification process is not performed immediately.

**Key words:** Blood meal, Preservation, Gassina, ELISA.


**Abstract**

The in vitro antimalarial activity of crude extracts from aerial parts of *Ajuga remota* Benth., *Artemisia afra* Jacq. And *Artemisia rehan* Chiov., seeds of *Lepidium sativum* (L.) and roots of *Securidaca longipedunculata* Fresen. Were studied by utilizing the inhabitation of uptake of $[^3]$H hypoxanthine into *P.falciparum* line FCA-2/Ethiopia. Of the five extracts tested, extracts from seeds of *L. sativum* and *S. longipedunculata* showed no anti-malaria activity at the highest concentration [50 µg (ml)$^{-1}$] used in the present study. However, ethanol extracts from ethanol extracts from aerial parts of *A. afra*, *A. rehan* and *A. remota* possessed antimalarial activity with IC$_{50}$ values of the order of 7-23 µg/ml$^{-1}$. *A. afra* showed the highest activity [IC$_{50}$=7 mg (ml)$^{-1}$] as compared to that of *A. rehan* [IC$_{50}$=14 mg (ml)$^{-1}$] and *A. remota* [IC$_{50}$=23 mg (ml)$^{-1}$]. Results of this study showed that the extracts from three of the plants did have antimalarial activity, which suggests further investigations of cytotoxicity, chemical isolation and *in vivo* studies of those plants with potential anti-malarials.


**Abstract**

In an attempt to assess the vectorial status of *Anopheles tenebrosus* (Donitz, 1902) in the transmission of malaria in Sille, more than 500 field collected Anopheline mosquitoes were fed on *Plasmodium falciparum* gametocyte carrier patients (on average 300 gametocyte count/mm$^3$). Salivary gland dissections and dry specimen preservations were made from day eight through day fourteen. A total of 114 specimens were salivary gland dissected and 18(15.8%) were found positive for salivary gland sporozoites. Similarly, the head-thorax portions of 70
killed and dried mosquitoes were tested using the DNA hybridization technique. On this test, five (7%) were found positive for the sporozoite DNA. The results obtained in this investigation have confirmed the previous monoclonal antibody-based ELISA head-thorax sporozoite antigen detection for A.tenebrosus. The study has provided a good proof for the susceptibility of A.tenebrosus to P.falciparum infection and that it supports complete extrinsic parasite development up to localization in the salivary glands. The findings strongly suggest A.tenebrosus's capacity to transmit the parasite in the process of blood feeding.


**Abstract**

The *in-vitro* activity of ofloxacin, lomefloxacin, ciprifloxacin, fleroxacin, DR-335, and PD-127391 which are all members of the fluoroquinolones and other unrelated (classical) antimicrobials that include, amoxycillin, sulphamethoxazole, trimethoprim, tetracycline and chloramphenicol have been compared against *Salmonella typhi*, *campylobacter jejuni*, *Yersinia enterocolitica*, *Vibrio cholerae*, *Aeromonas hydrophila*, and *Vibrio parahaemolyticus*. Minimum inhibitory concentrations (MICs) of the antimicrobial agents examined were determined. All members of the fluoroquinolones were highly active against all isolates examined and inhibited them at a concentration of <1mg/L. By contrast, many of the isolates examined were resistant to one or more of the classical antimicrobial agents. These results showed a potential clinical role for all the fluoroquinolone compounds tested in the treatment or prophylaxis of bacterial enteric infections where antimicrobial intervention is indicated.


**Abstract**

A cross-sectional survey was carried out in a sugar estate in central Ethiopia to identify a subgroup for a cohort study on the natural history of HIV infection. HIV prevalence was 2.8% (95% confidence interval [CI], 1.7%-3.9%) in 957 adults aged 15 to 54 years randomly selected for the initial survey. A follow-up survey including only factory workers of the estate aged 18 to 45 years (n = 280) showed a higher HIV prevalence in male factory workers (n = 262) compared with the male estate workers of the same age of the initial survey (n = 484; 8.8% versus 3.1 %; p < .05). Factors independently associated with HIV infection in male factory workers were number of lifetime sexual partners, positive syphilis serology, higher income, and absence of travel outside the residential area. Among male estate workers, only older age was associated with HIV infection. Both factory workers and male estate workers were stable residents and were willing to participate in a long-term study on HIV/ AIDS. However, because of the higher
HIV prevalence in factory workers and the higher prevalence of behaviors associated with an increased risk for HIV infection, factory workers were selected for the long-term cohort study on the natural history of HIV infection.


**Abstract**
The diagnostic performance of two concentration methods, Tween-80 and Formol-Saline, were evaluated using a total of 400 stool samples from patients referred to the Ethiopian Health and Nutrition Research Institute. Both tests showed similar rates of detection; Formol-Saline (50.3%) and Tween-80 (51%), and no significant difference was observed. The sensitivity and specificity of the Tween-80 method relative to the Formol-Saline technique were 97.0% and 95.5%, respectively. However, from the point of view of the relative availability of reagents and simplicity, the Formol-Saline concentration method is recommended for the diagnosis of intestinal parasites in basic service-giving health institutions and peripheral laboratories.


**Doesn't have an abstract**


**Abstract**
In relation to the malaria epidemic that broke out in the north central uplands in the autumn of 1991, blood film examinations were carried out on nearly 6,000 febrile patients in Ziway area. The slide positivity rate for malaria varied from 42 to 46% of all febrile cases. With a conservative 40% prevalence rate, over 2 million inhabitants of the fringe malarious uplands were estimated to be affected. Shift in malaria species ratio showed a 100% rise in *Plasmodium falciparum* the dominance rate reaching 5 *P. falciparum* to 1 *P. vivax* during the peak months of October and November. In vivo tests showed nearly 13% prevalence rate in RII/RIII chloroquine resistant *P.falciparum* (CRPF) and a 2% rate in pyrimethamine/sulfadoxine resistance. The role of population migration is discussed in relation to spreading CRPF, increasing the malaria reservoir population in the uplands and initiating the epidemic.


**Abstract**
In 1989/90, the parasite rate and anti *Plasmodium falciparum* antibody prevalence of settlers in Gambella were studied in comparison with the natives. The mean parasite rate was found to be 65.8% among the 1984 settlers, and 48.3% among
the 1978 settlers and the native anuaks. Species dominance rate showed 4 *P. falciparum* to 1 *P. vivax* ratio. Serologically, over 95% of the inhabitants were found positive for falciparum malaria infection at low IFA titre of 1:20. At a higher titre of 1:320, however, 44.5% of the 1984 settlers and 72.6% the 1978 settlers and natives showed humoral positivity. This work thus indicated on one hand, the development of immunity in adults within 5 to 10 years of settlement in hyperendemic areas, as was observed among the 1978 settlers; and on the other the re-establishment of a stable malaria situation in Gambella five years after the epidemic.


**Abstract**

Eighteen isolates of *Plasmodium falciparum* originating from different parts of Ethiopia were tested *in vitro* for their responses to three major anti-malarial drugs used in Ethiopia: Chloroquine, Quinine and Fansidar(R). Referenced by a multi drug resistant clone from Cameroon, FCM-29 C1, 1/3rd of the Ethiopian isolates were found resistant to chloroquine, and, with some degree of tolerance, to Fansidar. All isolates were found susceptible to quinine, showing a close relationship between the infrequent use of a drug and its continued potency as an anti-malarial drug.


**Abstract**

Based upon rainfall data and moisture indices for various ecogeographic regions of Ethiopia, the eastern regions lying lee- ward to the north central massifs were shown to be drought prone. Decreased rainfall in the years 1957, 1965, 1973, and 1984, super imposed on high population pressure and primitive farming practices, especially in the upland ecozones, has resulted in periodic famine epidemics. The migration of famine avoiding high-landers to the moist fertile lowlands have resulted in malaria outbreaks which for unknown reasons occur cyclically at intervals of 8-10 years. Such episodes were expected to occur in 1991/1992 and 1999/2000. The malaria epidemics arise by the traditional down gradient population movement, or by local outbreaks in the eastern escarpment where the malaria reservoir within the population has been built up by infected returnees from settlement sites. The necessary precautionary measures are presented.


**Abstract**
Sera from 170 factory workers aged 18-45 years enrolled in a pilot study of human Immunodeficiency virus 1 (HIV-1) infection in Addis Ababa, Ethiopia, were screened for anti-Toxoplasma immunoglobulin G antibodies by the Sabin-Feldman test (reference standard) and the Eiken latex agglutination test (under evaluation for use in developing countries). Based on the Sabin-Feldman test, the prevalence of anti-Toxoplasma antibodies was 80.0% (95% confidence interval 73.9-86.1%). The sensitivity and specificity of the Eiken latex agglutination test were 96.3% and 97.1%, respectively, showing its validity for the detection of anti-Toxoplasma antibodies. The prevalence of antibodies did not differ between individuals infected and uninfected with HIV-1 (74.2% versus 83.3%, $P > 0.05$). However, antibody titres were higher in HIV-infected persons than in those who were uninfected ($P < 0.001$). Based on these findings, we expect that toxoplasmic encephalitis will be a common opportunistic infection among HIV-infected Ethiopians, and chemoprophylaxis with co-trimoxazole may be beneficial to those with low CD4+ T cell counts. The prognostic significance of high titres of anti-Toxoplasma antibodies remains to be established among Ethiopian HIV-infected individuals.

**Key words:** Toxoplasmosis, Toxoplasma gondii, Sero-prevalence, chemoprophylaxis, Human immunodeficiency virus 1, Ethiopia.

151. **Timotewos Genbo, Wolde-Mariam Girma, Jemal Haider and Tsegaye Demisse. Factors contributing to positive and negative deviances in child nutrition.**


**Abstract**

A cross sectional study investigating factors leading to positive and negative deviance in child nutrition, was conducted between March and April 1996 at Zibabalto, Gurage Zone. Among 400 children aged 6-59 months, 231 children were randomly selected and categorized into negative deviants (lower tercile), median growers (middle tercile) and positive deviants (upper tercile) based on local distribution of height for age. Over 20 variables presumed to affect nutritional status of children were then collected and analyzed to see their associations to each category. The prevalence of malnutrition was also determined using the NCHS standard. The results indicated that 46.8% were stunted, 44.2% were under-weight and 13.0% were wasted. Of the over 20 variables, only nine variables showed significant differences at least among two categories. Religion, maternal education, maternal age, and income distinguished negative deviants from median growers. Prenatal follow-up, age of the child, and duration of breast feeding distinguished median growers from positive deviants. Only two variables, maternal body mass index and maternal height differentiated both positive and negative deviants from median growers. In conclusion our study revealed that factors responsible for positive and negative deviances are not necessarily the converse of each other implying that in depth assessment of factors leading to optimum nutrition is required before intervention strategies are considered.

**Abstract**

As a part of comprehensive evaluative study on various strategies to control vitamin A deficiency (VAD), a baseline survey was conducted in three woredas of Kambatta, Alaba and Timbaro zone (KAT) in Southern Nation’s and Nationalities and People’s Region in 1996. A total of 4123 children from randomly selected peasants associations were clinically examined for signs of Xerophthalmia while blood samples were collected from systematically selected 197 children for serum retinol analysis. Results indicate that 1.2% (51) of the children had a history of night blindness and 0.2% (8) had Bitot’s spots. Most cases of Bitot’s spots (6 out of 8) were in the age range of 36-72 months. The prevalence of Bitot’s spots was higher in male children compared to female children (5 and 3 respectively). Over a quarter of children (27.9%) had low serum retinol concentrations, while 4.6% had deficient serum retinol concentrations. Nearly equal numbers of male and female children (4 and 5 respectively) had deficient levels of serum retinol concentrations while more male children had low serum retinol levels compared to female children (28 and 17, respectively). The high prevalence of night blindness (WHO’s cut-off point of 1%) and serum retinol levels (WHO’s cut-off point of 20% less than or equal to 0.70umole/l) indicates that VAD is emerging as a public health problem in an area previously considered free of VAD. These findings justify the need to strengthen the invention strategies underway in the area.


**Abstract**

A cross-sectional study assessing the prevalence of food taboos during pregnancy, types of foods prohibited and the associations of some of the socioeconomic parameters to food taboos, was carried out in Hadiya Zone, Southern Ethiopia. Two hundred ninety five healthy pregnant women, who attended an antenatal clinic for routine check-up between February and May 1995, were included in the study. A questionnaire consisting of socioeconomic information, food taboo practice, types of foods avoided and reasons for avoidance was administered by trained nurses. The results indicate that a little over a quarter of them (27%) avoided at least one type of food due to food taboos. Milk and cheese were regarded as taboo foods by nearly half of the women (44.4%) followed by linseed and fatty meat (16% 11.1% respectively). The reasons for avoiding foods include fear of difficult delivery (51%), discoloration of the fetus (20%) and fear of abortion (9.7%). Among the few socioeconomic variables studied, education and income were found to influence food taboos (P<0.05). The findings underscore the importance of education and income in improving maternal nutrition, through changing food habits and increasing purchasing power of the mothers.
A cross-sectional study to estimate the prevalence of intestinal parasites has been conducted in 1996 in South Wello in the towns of Kembolcha, Bati, and Mekaneselam. A total of 698 students were selected randomly by using the master list of the school as a sampling frame. The students were interviewed using a questionnaire on the use of toilets, sources of water for drinking, and purpose of washing. From the study subjects stool samples were collected and, screened for intestinal parasites using the Ritchie formol-ether technique. Of the examined, 304 (43.6%) were positive for various intestinal parasites. *Schistosoma mansoni* (24.9%) was commonest followed by *Ascaris lumbricoides* (18.3%) and *Trichuris trichiura* (4.4%). Other less frequent parasites were *Hookworm Spp.* (2%), *Hymenolepis nana* (1.3%), *Giardia lamblia* (1.1%), *Strongyloides stercoralis* (0.9%), *Enterobius vermicularis* (0.3%), and *Trichostrongylus Sp.* (0.1%). Prevalence of *S.mansoni* was significantly higher in males than in females (P<0.01); in the 10-14 year old than in the 15-19 and 20+ age groups (P<0.05), and among the Bati students than in those in Kembolcha and Mekaneselam (P<0.001). Markedly higher rates of Ascaris and Trichuris were observed in Kembolcha (P<0.01) than in Bati and Mekaneselam but showing no difference between males and females, and between the two age groups. The public health implications of intestinal parasites among school children and possible control measures are discussed.

A sero-epidemiological study on typhus was conducted in Dessie, Mekele and the nearby towns. A total of 792 serum specimens were collected from patients with acute febrile illness who came to seek treatment in hospitals, health centres and malaria control centres. Also, 246 blood specimens were collected from apparently healthy individuals who donated blood to the blood banks of Dessie and Mekele. The specimen collection was performed during the rainy (July 31 - Sept. 3, 1993) and during the dry (May 21 - June 21, 1994) seasons. All specimens were tested by the Weil-Felix test and the Enzyme Linked Immunosorbent Assay (ELISA) for IgM antibodies specific to *Rickettsia prowazekii*. The disease prevalence was significantly higher during the rainy season than the dry season. A Weil-Felix test positivity of 5.3% and 13.5% in Mekele (OR=2.78, P<0.05); 6% and 18.7% in Dessie (OR=3.36, P<0.0001) were obtained for the dry and the rainy seasons, respectively. Using the IgM ELISA: the rates for Mekele of 8.7% and 31.1% (OR=4.75, P<0.001) and for Dessie, 21.6% and 28.4% (OR=1.44, P>0.05) were found during the dry and rainy
seasons, respectively. Among the various occupational groups, higher prevalence was observed in the student population (up to 36%). A general prevalence which ranged from 6% to 9% and 10% to 22% was observed in blood donors from the two towns by the Weil-Felix test and IgM ELISA respectively. The sero-prevalence observed in the various groups, the seasonality of the disease as well as the importance of laboratory diagnostic methods have been discussed in relation to possible future outbreaks of epidemic typhus.


Abstract
In 1993 a survey was conducted to examine family planning knowledge, attitude and use in Addis Ababa. One of the objectives of the survey was to look at those women who were exposed to high-risk birth (HRB), their contraceptive behaviour and the unmet HRB need for family planning. About 88% of the women were found to be exposed to at least one bio-demographic risk factor. Most of the women in the high risk category (70.6%) were exposed to high parity, followed by old age (56.6%) and closely spaced births (15.2%). A substantial number of women falling in the too old and too many bio-demographic risk categories expressed a desire to stop childbearing compared to women at no risk. Women in the too frequent category of high-risk birth significantly expressed a desire to space the next birth for at least two years when compared to those women who were not at risk of close birth spacing. The unmet HRB need among married women was 60% which is 10% higher than the conventional unmet need for family planning. Contraceptive prevalence among high-risk women was found to be 26% with 18% of them in need of a better family planning method.

1999


Abstract
Ergo is a traditionally fermented dairy product which has some resemblance to yogurt in its curd formation and acidity. Raw milk is allowed to ferment into Ergo for about 24hrs at ambient temperature before it is consumed. Time course studies on growth of the microorganisms involved in the fermentation of Ergo were made. Its fermentation is carried out by lactic acid bacteria belonging to the genera Lactococcus, Streptococcus, Leuconostoc and Lactobacillus. However, micrococci, sporeformers and coliforms were present in fairly high numbers during the first 14-16 h of fermentation. The Lactococci were the most dominant group throughout the fermentation (1 × 10⁵ at time 0 h and 4 × 10⁹ colony forming unit cfu (ml)^-1 just after milking increased to about 1 × 10⁵ cfu (ml)^-1 at the end of 24 h of fermentation. The total aerobic mesophilic count (TAM) increased from about 1 × 10⁵ cfu (ml)^-1 to 4 × 10⁹ cfu (ml)^-1 and at the same time titratable acidity
increased from 0.16 to 0.75% with concomitant drop in the PH.

**Key words:** Ergo, fermentation, lactic acid bacteria, milk


**Abstract**

**OBJECTIVE:** To assess syncytium-inducing (SI) and non-syncytium-inducing (NSI) frequencies, coreceptor usage and gp120 V3 sequences of HIV-1 isolates from Ethiopian AIDS patients.

**PATIENTS:** Cross-sectional study on 48 hospitalized AIDS patients (CD4 T cells < 200 x 10(6) cell/l) with stage III or IV of the WHO staging system for HIV-1 infection and disease.

**METHODS:** Peripheral blood mononuclear cells (PBMC) from all 48 patients were tested by MT-2 assay to determine SI/NSI phenotypes. Lymphocyte subsets were enumerated using Coulter counting and FACScan analysis. Viral load determination used a nucleic acid sequence-based amplification assay (NASBA). Coreceptor usage of HIV-1 biological clones was measured using U87 CD4/chemokine receptor transfectants and phytohemagglutinin-stimulated PBMC of healthy donors with wild-type CCR5 and homozygous mutation CCR5delta32 (a 32 base-pair deletion in CCR5). Reverse transcriptase polymerase chain reaction sequencing was performed on the third variable region (V3) of the HIV-1 gene gp120. Sequence alignments were done manually; phylogenetic analyses used PHYLIP software packages.

**RESULTS:** SI viruses were detected for 3/48 (6%) AIDS patients only. Lower mean absolute CD4 counts were determined in patients with SI virus compared with NSI (P = 0.04), but no differences in viral load were observed. All patients were found to be infected with HIV-1 subtype C, based on V3 sequencing. NSI biological clones used CCR5 as coreceptor; SI biological clones used CXCR4 and/or CCR5 and/or CCR3.

**CONCLUSIONS:** Ethiopian patients with HIV-1 C-subtype AIDS harbor a remarkably low frequency of SI phenotype viruses. Coreceptor usage of these viruses correlates with their biological phenotypes.


**Abstract**

In order to explore genomic plasticity at the level of the mini-exon gene-bearing chromosome in natural populations of *Leishmania*, the molecular karyotype of 84 *Leishmania* stocks belonging to subgenus Viannia, originating mostly from Peru and Bolivia, and differing according to eco-geographical and clinical parameters, was resolved and hybridised with a mini-exon probe. The results suggest that size variation of the mini-exon gene-bearing chromosome is frequent and important (up to 245-kb size-difference), and partially involves variation (up to 50%) in
copy number of mini-exon genes. There is no significant size-difference between mini-exon-bearing chromosomes of Peruvian and Bolivian populations of cutaneous and mucosal isolates of Leishmania (Viannia) braziliensis, but there is between eco-geographical populations of Leishmania (Viannia) peruviana. Leishmania (V.) peruviana presented a significantly smaller mini-exon-bearing chromosome than the other species of subgenus Viannia. The contrast between the general chromosome size heterogeneity and the homogeneity observed in some Peruvian Andean areas is discussed in terms of selective pressure.

**Key words:** Eco-geography, Karyotype plasticity, Leishmania, Mini-exon.


**Abstract**

Traditional medicine and surgery remain to be the best alternative health care system in Ethiopia available to more than 80% of the population. Although it was practiced for thousands of years, writings in Ethiopia date back few centuries. The effort to develop this sector is strengthened by the existing policies and the establishment of traditional medicine and drug research departments at the national level. Over 600 medicinal plants have been identified and their effects recorded. Five were recently been released to the public for mass production after extensive research proved them safe and effective. It is recommended that similar efforts be done for other favorable aspects of Ethiopian traditional medicine besides regulating unsafe practices.


**Abstract**

The structures of two new monodesmosidic spirostanosides and a new bidesmosidic furostanol glycoside isolated from the roots of *Asparagus africanus* Lam. (Liliaceae) have been elucidated as (25R)-3β-hydroxy-5β-spirostan-12-one 3-O-{β-d-glucopyranosyl-(1→2)-[α-l-arabinopyranosyl-(1→6)]-β-d-glucopyranoside} (1), (25R)-5β-spirostan-3β-ol 3-O-{β-d-glucopyranosyl-(1→2)-[α-l-arabinopyranosyl-(1→6)]-β-d-glucopyranoside} (2) and 26-O-β-d-glucopyranosyl-22α-methoxy-(25R)-furostan-3β,26-diol 3-O-{β-d-glucopyranosyl-(1→2)-[β-d-glucopyranoside} (3), respectively, by the combined use of one and two dimensional NMR experiments. The complete $^{13}$C and $^1$H assignments of the peracetyl spirostanosides and the furostanol oligoside were derived. The interconversions between the methoxyl and hydroxyl group at C-22 of the furostanol glycoside was investigated and the genuine furostanol oligoside of *A. africanus* appears to be the hydroxyl type based on the comparative study of the methanol, pyridine and dioxane extracts.

**Keywords:** *Asparagus africanus*; Liliaceae; Spirostanol glycoside furostanol glycoside; Gloriogenin; Smilagenin
A community-based cross-sectional study to investigate the association between hookworm infection and anaemia was carried out on 227 apparently healthy individuals living around Wolisso. Of these subjects, 155 were positive and 72 were negative for hookworm infections. It was found out that 32 (20.6%) of the hookworm positive and 4 (5.6%) of the hookworm negative individuals were anaemic. Chi-square analysis showed hookworm infection was significantly associated with low haemoglobin (Hb), low transferring saturation (TS) and low ferritin levels. Intensity of infection as expressed in eggs per gram of faeces showed a highly significant negative association with TS and serum ferritin levels (p<0.001) but not with Hb levels. The degree of anaemia could be considered as mild, however, the light hookworm infection could possibly lead to iron deficiency anaemia. When multiple criteria involving elevated mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), and macrocytic blood picture were taken as suggestive of a macrocytic type of anaemia, 20 (13.0%) of the hookworm positive and 4 (5.6%) of the hookworm negative individuals fell into this category. However, the association between parameters suggestive of macrocytic anaemia and hookworm infection was not strong.

A cross-sectional survey was carried out with 485 healthy working adult Ethiopians who are participating in a cohort study on the progression of human immunodeficiency virus type 1 (HIV-1) infection to establish hematological reference ranges for adult HIV-negative Ethiopians. In addition, enumeration of absolute numbers and percentages of leukocyte subsets was performed for 142 randomly selected HIV-negative individuals. Immunological results were compared to those of 1,356 healthy HIV-negative Dutch blood donor controls. Immunohematological mean values, medians, and 95th percentile reference ranges were established. Mean values were as follows: leukocyte (WBC) counts, 6.1 x 10(9)/liter (both genders); erythrocyte counts, 5.1 x 10(12)/liter (males) and 4.5 x 10(12)/liter (females); hemoglobin, 16.1 (male) and 14.3 (female) g/dl; hematocrit, 48.3% (male) and 42.0% (female); platelets, 205 x 10(9)/liter (both genders); monocytes, 343/microl; granulocytes, 3, 057/microl; lymphocytes, 1,857/microl; CD4 T cells, 775/microl; CD8 T cells, 747/microl; CD4/CD8 T-cell ratio, 1.2; T cells, 1, 555/microl; B cells, 191/microl; and NK cells, 250/microl. The major conclusions follow. (i) The WBC and platelet values of healthy HIV-negative Ethiopians are lower than the adopted reference values of Ethiopia. (ii) The absolute CD4 T-cell counts of healthy HIV-negative Ethiopians are considerably lower than those of the Dutch controls, while the opposite is true for
the absolute CD8 T-cell counts. This results in a significantly reduced CD4/CD8 T-cell ratio for healthy Ethiopians, compared to the ratio for Dutch controls.


**Abstract**

The major operational characteristics of five commercially available assays for the detection of antibodies to Human Immunodeficiency Virus (HIV1 & 2) were evaluated. Four Enzyme Linked Immuno-sorbent assays (ELISAs) and one simple immuno-dot assay with visual reading, were assessed using a panel of 265 sera (18.8% hospital suspected patients, 18.8% commercial sex-workers (CSW), 31.5% blood donor sample (BDS), and 30.9% of them were scholarship winners (SSW)). Sensitivity, specificity, positive predictive value, test efficiency, delta (δ) values (for the four ELISAs) were determined. All the assays had higher sensitivities (98.7-100%), specificities (97.2-99.1%), and test efficiencies (98.1-99.6%). Higher positive and negative delta (δ⁺, δ⁻) values, +1.17 and –0.99, were observed for ICE*HIV 1-0-2 and Vironostika Uniform II PLUS O, respectively. HIV-SPOT HIV 1 & 2 showed highest value of ease of performance and suitability for small blood bank collection centers. Results of this study showed that the test efficiency, sensitivity, and specificity of the test kits were excellent as compared to the reference test. Further studies on cost-effectiveness and evaluation of newly arrived test kits before use at different levels are recommended.


**Abstract**

The aim of the study was to determine the prevalence of gastrointestinal parasites in Acquired Immunodeficiency Syndrome (AIDS) patients with chronic diarrhea. This prevalence was compared with two control groups: Human Immunodeficiency Virus (HIV) sero-negative diarrheal patients and HIV sero-positive individuals without diarrhea. Stool specimens from clinically diagnosed hospitalized AIDS patients in some hospitals in Addis Ababa were screened for parasite infection. Of 147 AIDS patients with chronic diarrhea, 74 (50.3%) were infected with one kind or more of parasites. Out of 56 non-AIDS (sero-negative) diarrheal patients, 41.1% (23/56) and out of the 43 non-diarrheal (sero-positive) patients, 41.9% (18/43) were infected by a variety of intestinal protozoa and helminths. The parasites detected in AIDS patients were *Cryptosporidium* spp, *Isospora* spp, *Blastocystis* spp, *Ascaris lumbricoides*, *Giardia lamblia*, *Strongyloides stercoralis*, *Taenia* spp, *Trichuris trichiura*, *Entamoeba histolytica*, and *Hook worm* spp. Among the intestinal parasites, *Cryptosporidium* spp was exclusively associated with AIDS patients. The high proportion of the study subjects who had diarrhea in the absence of identifiable parasitic infections suggests that other infectious agents (e.g. Bacteria and Virus) or mechanisms other than infectious agents are responsible for the diarrhea.

Abstract

Objective: To assess the familial tendency and dietary association of goiter.

Design: Cross-sectional study with descriptive and analytical components.

Settings: Goma-Gofa, south Ethiopia.

Subjects: Five hundred and ninety seven elementary school children aged 6-18 years and their biological parents.

Results: Prevalence of goiter was found to be 51.7% of which 21.7% was visible goiter. The mean urinary iodine extraction levels indicated adequate dietary intake of iodine by the study group. A significant association (p < 0.001) was established for familial tendency of goiter between parents and their children. Consumption of halleko (Moringa stenopetala), a leafy vegetable common in the study area, of more than two times per day was significantly (p < 0.005) associated with causation of goiter.

Conclusion: These results strongly suggest that goiter prevalence in Gamo-Gofa, Ethiopia is due to familial tendency as well as dietary factors.


Abstract

A study on traditional medicinal use of garlic was carried out among rural and semi-urban resident traditional health practitioners in the Southern Nations Nationalities and Peoples Regional State (SNNPR) in 1996. A total of 125 traditional healers took part in the study in eight Zones and three Special Woredas in the Region. Their responses indicated that garlic is used for the treatment of common cold (88%), malaria (85%), cough and lung TB (66%), hypertension (57%), wounds (25%), sexually transmitted diseases (22%), mental illnesses (22%), kidney (19%), and liver diseases (16%). The responses also suggest that the medicinal content lies in the broad-bulb which must be taken raw. Ninety six (77%) respondents stated that the bulb should be crushed before use while 88(70%) of them suggested the taking of 2-3 table spoonfuls of the crushed garlic on daily basis. The duration of treatment varied from one to ten days. The frequency of use is indicated to be once every morning (46%), twice a day, in the morning and at night (30%) and thrice a day (18%). Twenty nine (23%) of the respondents suggested the use of lemon juice after consuming the garlic preparation in order to reduce the odor. All of these claims have concurred with the so far documented scientific explanation about the medicinal value of this plant. But there could be a problem with standardizing the dosage as there has been no attempt made to extract the medicinal contents using modern techniques so as to incorporate it into the pharmaceutical sector in this country. Thus, it is recommended that preparation and use of garlic for incorporation into the modern medical treatment system should be investigated further.
Abstract

OBJECTIVE: To study the association between the clinical axis of the World Health Organization (WHO) staging system of HIV infection and disease and laboratory markers in HIV-infected Ethiopians.

DESIGN: Cross-sectional study.

METHODS: Clinical manifestations and stage of HIV-positive individuals participating in a cohort study of HIV infection progression, and of HIV-positive patients hospitalized with suspicion of AIDS, were compared to CD4+ T-cell count and viral load.

RESULTS: Of the 86 HIV-positive participants of the cohort study, 53 (62%), 16 (19%), 16 (19%), and one (1.2%) were in stage 1, 2, 3 and 4, respectively. Minor weight loss (n = 15) and pulmonary tuberculosis (n = 9) were the most commonly diagnosed conditions among the 38 (44%) symptomatic HIV-positive individuals. Although 23 (27%) HIV-positive participants had CD4+ T-cell counts less than 200 x 10^6/l, only one was in clinical stage 4. Among 79 hospitalized HIV-positive patients, 15 (19%) and 64 (81%) were in stage 3 and 4, respectively. The majority (83.5%) had CD4+ T-cell counts < 200 x 10^6/l. Individuals at stage 3 had lower CD4+ T-cell counts and higher viral loads when seen in hospital as compared to cohort participants (P = 0.06 and 0.008, respectively). When grouping the two study populations, the median CD4+ T-cell count decreased (337, 262, 225, 126, and 78 x 10^6/l, P< 0.01), and the median viral load increased (4.08, 3.89, 4.47, 5.65, and 5.65 log10 copies/ml, P < 0.01), with increasing clinical stage of HIV infection (1, 2, 3 cohort, 3 hospital, and 4, respectively). Median CD4+ T-cell counts were remarkably low in HIV-negative participants (749 x 10^6/l), and in HIV-positive participants at stage 1 and 2 (337 and 262 x 10^6/l, respectively).

CONCLUSIONS: There was a good correlation between WHO clinical stages and biological markers. CD4+ T-cell counts were low in Ethiopians, particularly during early stages of HIV-1 infection, and preliminary reference values at different stages of HIV-1 infection were determined. In HIV-infected Ethiopians, lymphocyte counts less than 1,000 x 10^6/l in non-hospitalized individuals, and less than 2,000 x 10^6/l in hospitalized patients, had high positive predictive value, but low sensitivity, in identifying subjects with low CD4+ T-cell counts (< 200 x 10^6/l) who would benefit from chemoprophylaxis of opportunistic infections. The on-going longitudinal study will be useful to confirm the prognostic value of the WHO staging system.

Key words: HIV infection, WHO staging, CD4+ T-cell counts, Viral load, Ethiopia, Africa.

**Abstract**

In a cross-sectional study carried out in four purposefully selected slum kebeles of Addis Ababa, the nutritional status of 758 children aged 6 - 36 months was measured and subsequently classified into malnourished and well nourished groups. Child-feeding practices of randomly selected mothers of the two groups of children were compared with the view of identifying practices that contribute to child-nutrition insecurity in the study area. The result indicated that the majority of the mothers (i.e. 99.5% in the malnourished and 98.4% in well nourished groups) had initiated breast-feeding, and no significant difference was found either in the median or mean duration of breast-feeding between the two groups of mothers. After adjustment has been made (through logistic regression) for covariates, the study established that exclusive breast-feeding beyond four months, feeding low quality diet with a frequency of less than four times and giving porridge with feeding bottle as well as low household income are the risk factors contributing to young children’s nutrition-insecurity in the slum section of Addis Ababa. Hence, demonstrative and sustained education focusing on appropriate child-feeding is recommended together with initiation of income generating projects with a view of empowerment of those families whose monthly income is low.


**Abstract**

A survey was conducted to determine the prevalence of xerophthalmia in Alaje and Samre weredas of Tigray Region, Northern Ethiopia, where EPI-plus and Wereda Integrated Basic Service (WIBS) approaches are being launched to prevent and control vitamin A deficiency. A total of 5,253 preschool children (PSC) were clinically examined between October and November, 1996 for ocular signs of xerophthalmia. Blood samples were drawn from 248 PSC for serum retinol levels (SRL). The overall prevalence rates of night blindness (XN) and Bitot's spot (X1B) for both weredas were 0.9% and 1.5%, respectively, with a higher prevalence rate in males than females (53 vs. 26). Alaje wereda (EPI-plus) had XN=21(0.8%) and X1B=38(1.4%), and Samre wereda (WIBS) had XN=25(1.0%) and X1B=41(1.7%). No sex difference was seen in the prevalence rate of corneal xerosis and keratomalacia (0.4%). The most affected age groups were children between five and six years of age. Both weredas showed the distribution of serum retinol levels to be deficient in 21(16.7%) in Samre and 19(15.5%) in Alaje, and low in 60(47.6%) in Samre and 57(46.7%) in Alaje. Low SRL is found to be highest among children between five and six years of age in males and between two to three years of age in females in both weredas. The high prevalence rate of X1B (three times higher than the WHO cut-off point), and the low level of serum retinol value found in this study indicates the need and urgency for the continuation of the aforementioned strategies of vitamin A
deficiency control program launched in the Region until their impact is further evaluated.


Abstract

OBJECTIVE: To determine the level of malnutrition and xerophthalmia in pre-school children.

DESIGNS: Non-randomized community based study.

SETTINGS: Four different administrative regions: Harare, Tigray, Southern Nation Nationalities and people region (SNNPR) and Oromiya, with different eco-zones, were studied from May to June 1996.

SUBJECTS: Fifteen thousand and eighty seven children, aged between six and 71 months, examined for clinical symptoms and signs of xerophthalmia. Anthropometry and blood samples were taken from every 20 children (n = 634) of same age, for serum retinol and nutritional determination. INTERVENTION MEASURES: Disease targeted approach of vitamin A supplementation was employed in the regions.

RESULTS: The overall prevalence rates of night blindness and Bitot's spots exceeded WHO cut-off point for xerophthalmia as a public health problem, with higher prevalence rates in males (53%) than females (26%). The proportion of children with deficient serum retinol concentrations (SRC), and Bitot's spot were observed to be higher in Oromiya and Harare regions followed by Tigray, than SNNPR administrative regions. Most of the affected children were aged between 36 and 72 months. The greatest low SRC was also observed in the same age group of children in all regions. There was higher prevalence rate of stunting (60.1%) than wasting (12.2%) with an additional (8.8%) of children both stunted and wasted. The proportion of stunted children was high in Tigray followed by Oromiya, SNNPR and Harare regions.

CONCLUSION: The high level of stunting and Bitot's spot, together with the low level of serum retinol concentrations found in these regions, indicates the need to strengthen this intervention strategy further with universal vitamin A capsule distribution, nutrition education and promotion of horticulture activities.


Abstract

Iron bioavailability from commercial weaning foods and wheat flour of varying extraction rate was measured using the in vitro method. Phytic acid content of the gruel and porridge meals decreased from 3 to 15%. Iron bioavailability values for each meal were lower in gruel than in porridge, but the relative inhibitory effect of phytate and the enhancing effect of cooking were similar. The availability, 44%, from sour dough fermented bread containing no phytate and the lowest, 12%, from yeast-fermented bread. There was a strong inverse correlation between available iron and the phytate content of different weaning foods tested may not be regarded as a useful source of bio-available iron for rapidly growing infants if fed as gruel or porridge. However, substantial improvement in iron bioavailability
due to fermentation may be of practical nutritional importance to the prevention of iron deficiency to vulnerable groups where cereal-based diets with low animal protein content are the staples.


Abstract

Anemic rats were fed on diets containing sour dough bread (Difo dabbo) or porridge prepared from soy-fortified wheat flour (Dubbie) as the source of nonheme iron. The criteria used to determine the relative biological value (RBV) of iron was the hemoglobin regeneration efficiency (HRE). Animals fed diets with casein as a source of dietary protein and FeSO$_4$ (RBV of FeSO$_4$ = 100%) served as control. The RBV of endogenous iron in sour dough bread (Difo dabbo) and porridge was found to be 83 and 36%, respectively. The respective mean apparent absorption of iron were 85, 66 and 35% for anemic rats when the FeSO$_4$, sour dough bread and porridge diets were fed. Fermentation of the Dubbie into sour dough bread resulted in a complete removal of the phytic acid content and subsequent increase in iron absorption. It is concluded that sour dough bread (Difo dabbo) is a good source of iron compared to porridge prepared from Dubbie.

Key words: Bread, iron bioavailability, porridge, soy-wheat flour


Abstract

Indoor-resting blood-fed anopheles gambiae s.l. was collected from selected localities in Ethiopia. Anopheles arabiensis was the only sibling species identified. Para centric chromosomal inversion polymorphisms were observed on the 2R and 3R arms. A significant excess of heterozygotes was obtained in samples from Sille carrying the 3Ra inversion. Similarly, significant variation was seen in the frequencies of the 3Ra inversion between the study localities. The observed intraspecific inversion polymorphisms relative to indoor-resting behavior are discussed.

Keywords: An. Arabiensis, inversion polymorphisms, mosquito resting behavior, Ethiopia


Abstract

Background: whereas detecting M. tuberculosis with microscopic examination has low sensitivity, and culture takes weeks, a faster and sensitive way of identification of tuberculosis infection remains to be the Polymerase Chain Reaction (PCR) amplification procedures. The aim of the study was to investigate
the potential use of PCR in diagnosing tuberculosis (TB) from peripheral blood of pulmonary TB patients.

**Methods:** Blood samples were taken from thirty untreated, smear positive pulmonary tuberculosis attending Yekatit 12 and Tikur Anbessa hospitals in Addis Ababa. The procedure followed was a nested PCR protocol using primers for insertion element specific for M. tuberculosis complex, IS-6110.

**Results:** Out of the 30 patients diagnosed (using direct microscopy and culture) with pulmonary TB, 16/30 (53.3%) were found to be positive in the IS-6110-based nested PCR. Out of the 13 HIV and TB co-infected patients, PCR was positive in 12 (92.3%) while only 4 (23.5%) out of 17 HIV negative TB patients were PCR positive.

**Conclusions:** Irrespective of the fact that patients were selected for this study based on smear positivity, comparison with smear and culture showed that IS-6110-based nested PCR from peripheral blood is less sensitive especially for HIV negative patients than these standard laboratory diagnostic procedures. However, the technique has potential for diagnosis of TB in HIV positive patients, and may have merit to diagnose when disseminated TB is suspected and as a research tool for measuring mycobacterial DNA in peripheral blood.

**Key words:** Polymerase Chain Reaction (PCR), *Mycobacterium tuberculosis*, DNA, Peripheral blood.

---


**Abstract**

A survey to determine the prevalence of Onchocerciasis in a sample population aged 5 years and over was made in Pawe, western Ethiopia. A total of 986 persons (636 settlers and 350 indigen) were examined for parasitological (in a skin snip) and clinical manifestations, of which 310 (27.8% settlers and 38.6% indigenous) were found infected with *Onchocerca volvulus*. Apart from itching and associated acute popular eruption the following signs in the skin and lymphatic system were recorded:- skin atrophy, skin depigmentation, and presence of nodules. Blindness due to Onchocerciasis has not been assessed. The entomological investigation through larval and adult collection and identification showed the presence of the anthropophilic vector species *Simulium damnosum* s.l. out of the 111 adult black flies caught, 65 parous flies were identified and dissected for the presence of microfilaria. One fly was found positive for L₂ stage and 3 flies were positive for L₃ stage giving 5% of the dissected flies’ positive for infection with *O. volvulus*. The results obtained in this study indicate the need for an immediate control measure.

---

Abstract

OBJECTIVES: To describe sexual behaviors, perception of risk of HIV infection, and factors associated with attending HIV post-test counseling (PTC) among Ethiopian adults.

METHODS: Data on socio-demographic characteristics, knowledge of HIV infection, sexual history, medical examination, and HIV and syphilis serological status were compared, through uni- and multivariate analysis, in relation to attending PTC within 60 days of HIV testing.

RESULTS: Between February 1997 and June 1998, 751 factory workers were enrolled in a cohort study of HIV infection progression. Despite reporting high-risk sexual behaviors, mainly for males (64% of males and 6% of females had more than five sexual partners in their lifetime, 16% of males and 2% of females reported having had recent casual partners), and knowing that HIV is commonly transmitted heterosexually in Ethiopia (97% of answers being correct, both genders combined), only 17% of males and 2% of females acknowledged having had activities which had put them at risk of HIV infection. HIV prevalence was 12%, and did not differ by gender. Of all study participants, 327 (43.5%) returned for PTC within 60 days of HIV testing. PTC attendance did not differ by age, gender, or HIV serological status. Factors independently associated with PTC attendance in males were: good knowledge of HIV infection, [odds ratio (OR) = 1.661, belief that medical follow-up improves the course of HIV infection (OR = 2.02), history of genital symptoms (OR = 2.83), positive syphilis serology (OR = 2.62), recent weight loss (OR = 1.89), and, with a negative association, being a manual worker (OR = 0.40), and history of recent casual sexual relationships (OR = 0.35). In women, belief that HIV/AIDS can be cured (OR = 3.16), never having been married (OR = 5.02), having five or less children (OR = 2.16), having been raped (OR = 3.42), and having used health facilities in the past year (OR = 1.73) were all positively and independently associated with PTC attendance.

CONCLUSION: Study participants reported high-risk sexual behaviors, yet had a low perception of individual risk. Men attended for PTC because of their knowledge of HIV infection, their past sexual history or their current health status. Women attended for PTC because of their plans for the future, marriage and/or children, rather than their past sexual exposure. Only in cases of rape were they willing to learn of their HIV status.


Abstract

OBJECTIVE: To determine the shelf life, rapidity and diagnostic performance of ParaSight-F.

DESIGN: Prospective randomized study.

SETTINGS: Malaria diagnostic and treatment posts and health centers in central-southern part of the Ethiopian Rift Valley.

SUBJECTS: Three hundred and eighty two subjects randomly selected.
MAIN OUTCOME MEASURES: Double blind evaluation of the sensitivity, specificity and predictive values of PFT versus CBF.

RESULTS: The point prevalence was found to be 29.7% with species dominance of P. falciparum to P. vivax in the ratio of 4:1. The ParaSight-F test showed, considering P. falciparum only, a sensitivity of 92.5% and specificity of 93%. A remarkably high positive predictive value (PPV) of 82% as well as a negative predictive value (NPV) of 99% was obtained. Considering all species of Plasmodium, sensitivity was 78.6% and specificity 93%, with PPV and NPV of 82% and 91% respectively. Moreover, PFT was found to be rapid with a batch of ten-strips—a rack completed in 30 to 50 minutes, which was five to six times faster than CBF reading. In shelf-life studies, after one year of storage at room temperature, results were found similar to the original readings, indicating the stability and long durability of the test strips.

CONCLUSION: In their durability and high diagnostic performances, both the microscopic slide readings and PFT were found comparable and interchangeable, and advantage in endemic areas where laboratory facilities are not available. The rapidity of PFT may be of greater value during malaria epidemics. But during non-epidemic seasons, the inability of PFT not to detect all forms of malaria remains a drawback.


Abstract
A cross-sectional investigation on the distribution and prevalence of intestinal parasitic infection was undertaken in Western Abaya, North Omo, in January 1995. As the area is potentially irrigable for modern agriculture, emphasis was placed to explore on the endemicity of schistosomiasis, including malacological assessments. Five percent of the whole populations on 1473 people, in 16 villages of the area, were parasitological examined for intestinal parasites. Among the intestinal parasitic infections, hookworm was demonstrated in all of the villages with prevalence’s ranging from 4.1% (Algie) to 75% (Wajifo). The majority of the villages (10/16=62.5%) had hookworm prevalence’s of over 50%. Schistosoma mansoni infections were found in 11 villages with prevalence of up to 53% with more males than females being affected (p<0.001). Infected Biomphalaria sudanca snails with infection rates of up to 2.1% at two sites of Lake Abaaya were also found. The importance of the dominant, S. mansoni and hookworm infections in the potentially irrigable area of Western Abaya and feasible measures of their control are discussed.

Abstract
A cross-sectional study intended to assess the association of the nutritional status of children aged 6-59 months in relation to the literacy status of their mothers was undertaken in Zigbaboto village, Guragie Zone, Southern Ethiopia, during March-April, 1996. The study was based on 231 children and the overall prevalence’s of stunting, underweight and wasting were 46.7%, 44.2%, and 13.0%, respectively. A bivariate analysis based on height-for-age showed a high prevalence of stunting in children of illiterate mothers (52.2%) than children of literate mothers (22.2%). This difference is noted to be statistically significant (P<0.05). A multivariate analysis also demonstrated that within the given literacy status, income (that is mainly based on possessions of agricultural products and livestock), prenatal follow-up of the mother, and household size did not show any statistical significance on the nutritional status of the study children. The findings underscored the importance of maternal education for a better achievement of nutritional status than any other variable and has important implications for policy and for further investigation in a similar community.


Abstract
Laboratory animal breeding and maintenance problems existing in Ethiopia were assessed and identified. From which part of the breeding or maintenance activities and the problems emerged were identified. Some Laboratory animal breeding and maintenance facilities were visited. A comprehensive questionnaire was distributed to various institutions in Ethiopia. The visits were limited to institutions in and around Addis Ababa where many of the laboratory animal facilities are concentrated. The questionnaire was distributed to all institutions that were believed to breed/ maintain laboratory animals. Therefore, most of the institutions which were outside Addis Ababa were reached only through the questionnaire. Collection and microscopic examination of faecal samples were carried out on a representative population of animals to assess the health status of the animals. Some positive results have been obtained. Samples from diets of some animals were also taken from the visited institutions. To evaluate the quality of the diet, each sample was analyzed for its nutrient contents. This study demonstrated that there are problems in housing, feeding, staffing, provision of veterinary care, breeding system and the like. The annual production and utilization of laboratory animals in the country was also found to be very minimal.


Abstract
A cross-sectional study on pregnancy-related food aversions, (as a component of a comprehensive study on Dietary Changes during Pregnancy) was carried-out in Southern Ethiopia. Two hundred ninety five pregnant women, who attended an antenatal clinic for routine check-up between February and May 1995, were
interviewed on food aversions they experienced in the course of their current pregnancies. About two thirds (65%) averted at least one food item while among them over 26% averted two or more foods. As indicated by the proportion of women averting specific foods, roasted wheat, coffee, wheat bread, meat sauce, and tef Injera were the major food items averted (34.1%, 20%, 16.5%, 11.5%, and 9.3%, respectively). Mean onset of aversion was at 2nd month of pregnancy (2.23±1.6) and the average duration of aversion was about four months (4.25±2.3). Aversion was not related to education, gravidae, income, residence or age. In-depth studies are highly recommended in order to elucidate the causes and contributions of aversions to maternal nutrition.


Abstract
To assess possible differences in immune status, proportions and absolute numbers of subsets of CD4+ and CD8+ T cells were compared between HIV-healthy Ethiopians (n = 52) and HIV- Dutch (n = 60). Both proportions and absolute numbers of naive CD4+ and CD8+ T cells were found to be significantly reduced in HIV Ethiopians compared with HIV- Dutch subjects. Also, both proportions and absolute numbers of the effectors CD8+ T cell population as well as the CD4+CD45RA-CD27- and CD8+CD45RA-CD27- T cell populations were increased in Ethiopians. Finally, both proportions and absolute numbers of CD4+ and CD8+ T cells expressing CD28 were significantly reduced in Ethiopians versus Dutch. In addition, the possible association between the described subsets and HIV status was studied by comparing the above 52 HIV- individuals with 32 HIV+ Ethiopians with CD4 counts > 200/microliter and/or no AIDS-defining conditions and 39 HIV+ Ethiopians with CD4 counts < 200/microliter or with AIDS-defining conditions. There was a gradual increase of activated CD4+ and CD8+ T cells, a decrease of CD8+ T cells expressing CD28 and a decrease of effectors CD8+ T cells when moving from HIV- to AIDS. Furthermore, a decrease of naive CD8+ T cells and an increase of memory CD8+ T cells in AIDS patients were observed. These results suggest a generally and persistently activated immune system in HIV- Ethiopians. The potential consequences of this are discussed, in relation to HIV infection.

Keywords: Ethiopia; HIV-1; T cells; naive cells; activation

The accurate determination of breast-milk intake of infants is essential in order to estimate energy intake and nutrient requirement during infancy and lactation. The deuterium dilution technique was employed for measuring breast-milk intake in exclusively breast-fed Ethiopian infants. This method is convenient for field conditions rather than the commonly used test-weighing procedure. In addition, the feasibility of using the less specialised, more efficient and considerably cheaper instrument, Fourier Transform Infrared (FTIR), was evaluated in the Ethiopian setting. The results obtained were compared to that of Isotope Ratio Mass Spectrometer (IRMS). Ten mother-infant pairs were recruited from two government subsidised health centres, namely Ledeta and Semen. Mothers received a pre-weighed 30g oral dose of D$_2$O. Maternal and infant saliva samples and breast milk samples were collected over a 14-day period following dose administration. Anthropometric data were also collected. Saliva and defatted milk samples were analysed for deuterium enrichment by Infrared Spectroscopy and Mass Spectrometry and the data were fitted into two-compartment model. Infant weights were compared with a 12 months breast-fed infant-pooled data set. Comparison of these infants with 12 months breast-fed pooled data set showed that weight for age Z-scores were below the mean. There was no significant difference between initial and final Z-scores (p>0.05) during the experimental period although all of the infants showed some catch-up growth. Mean ± SD breast milk intake was 850±120ml/day and 880±120ml/day measured using FTIR and IRMS, respectively. The study has demonstrated that it is feasible to measure breast milk intake using deuterium dilution technique in the Ethiopian setting and Infrared spectroscopy could be used for the purpose. It also confirmed that Ethiopian mothers have comparable or higher milk output than privileged communities. These findings have important implications for future research.

2000


Abstract

Others and we have previously shown that subtype C is the predominant HIV-1 subtype and the major cause of AIDS in Ethiopia. The present study shows that subtype C in Ethiopia has a genetic sub cluster, designated C’, has not increased in frequency, or spread geographically, over the period 1988 (%C’ = 23/53) to 1996-1997 (%C’ = 26/50). There is no association of the HIV-1 subtype C or sub cluster C’ with geographic location, time of sample collection, or risk group in Ethiopia. Of 105 randomly collected samples representing 7 different towns in Ethiopia, all
but 2 (1 subtype A from Addis Ababa, 1997 and 1 subtype D from Dessie, 1996) belong to subtype C.


Abstract
Few studies have examined the interaction between schistosomiasis and infection with human immunodeficiency virus (HIV). The overlap between the two infections, and the effect of HIV infection on the egg output and worm load of individuals co-infected with Schistosoma mansoni, were therefore investigated in a sugar estate in central Ethiopia. The 1239 subjects were selected by stratified sampling of residents aged 15-54 years. The intensities of infection with S. mansoni were measured as egg output in stools (all subjects) and as the concentration of circulating cathodic antigen (CCA) in urine (a proxy for worm load, measured in 287 subjects). Schistosome infection was detected in 358 subjects [adjusted prevalence (AP) = 31.4%] and HIV infection in 52 (AP = 3.1%). The two infections clustered into different populations of the estate: the schistosome infections were predominantly found in the camps, and primarily affected young people (aged < 20 years) and those working in the field, whereas the HIV epidemic was found in the main village, primarily affecting those aged > 20 years and those who had recently arrived on the estate. Schistosome infection was detected in 348 of the 1187 HIV-negatives (AP = 31.6%) and 10 of the 52 HIV-positives (AP = 25.1%; P > 0.05). Schistosoma mansoni egg output was significantly lower in the HIV-positives than in the HIV-negatives (Mann-Whitney test; P = 0.03; ratio of geometric means = 0.74), and remained so after controlling for potential confounders (gender, age, and residence). However, CCA concentrations (i.e. worm loads) were found to be similar for these two groups, after controlling for potential confounders (age, gender, residence, and duration of residence).


Abstract
Intestinal parasitic infections could play an important role in the progression of infection with human immunodeficiency virus (HIV), by further disturbing the immune system whilst it is already engaged in the fight against HIV. HIV and intestinal parasitic infections were investigated in 1239, randomly selected individuals, aged 15-54 years, living on a sugar estate in central Ethiopia. Intestinal parasites were identified in faecal samples (one/subject) using direct, concentration, and (for Strongyloides stercoralis larvae) Baermann methods. HIV
serological status was determined using ELISA, with ELISA-positive samples confirmed as positive by western blotting. Most (70.1%) of the subjects were infected with at least one intestinal parasite and 3.1% were sero-positive (but asymptomatic) for HIV. The intestinal parasites identified in the study population were amoebic parasites (Entamoeba histolytica/Enta. dispar) (24.6%), hookworms (23.8%), Ascaris lumbricoides (22.2%), Trichuris trichiura (19.5%), S. stercoralis (13.0%), Taenia saginata (4.5%), Giardia lamblia (3.0%), and Enterobius vermicularis (1.3%). Overall, the HIV-positives were no more or less likely to carry intestinal parasites than the HIV-negatives (76.2% v. 69.9%; P > 0.05). However, when each parasite was considered separately, amoebic parasites were found to be more common in the HIV-positives than the HIV-negatives (43.7% v. 24.0%; P < 0.05). This difference remained significant in a multivariate analysis, after controlling for the socio-demographic characteristics of the study participants. In conclusion, there was moderate interaction between intestinal parasites and HIV at the asymptomatic stage of HIV infection. The observed association between amoebic and HIV infections requires confirmation in a prospective study, allowing for the analysis of biological mechanisms involved in the association.


Abstract
The MeOH extracts of the stem bark of Entada abyssinica and of the leaves and stem bark of Securidaca longipedunculata yielded a diterpene, a flavonol glycoside and a phytosterol glycoside. Their structures were established on basis of NMR spectroscopic analysis; the complete $^{13}$C and $^1$H assignment of the compounds was achieved by means of 2D NMR studies.

Key words: Securidaca longipedunculata, Entada abyssinica, Leguminosae, Polygalaceae, Diterpene, Flavonol glycoside.


Abstract
The structures of two new monodesmosidic triterpenoid saponins (1 and 2) and the known compound delta 5-stigmasterol-3-O-beta-D-glucopyranoside (3) as well as two new oleanane type triterpene lactone glycosides 4, 5 and a new sapogenin lactone 6 isolated from the stem bark of Albizia gummifera C.A. Smith (mimosaceae) have been elucidated as 3-O-$\alpha$-beta-D-glucopyranosyl(1$\rightarrow$2)-[alpha-L-arabinopyranosyl(1$\rightarrow$6)]-beta-D-glucopyranosyl$\gamma$-oleanolic acid (1), beta-D-glucopyranosyl(1$\rightarrow$2)-beta-D-glucopyranosyl 3-O-$\alpha$-beta-D-glucopyranosyl(1$\rightarrow$2)-[alpha-L-arabinopyranosyl(1$\rightarrow$6)] beta-D-g lucopyranosyl$\gamma$-manchaerinic acid gamma-lactone (4), 3 beta-O-beta-D- glucopyranosiduronic acid (1$\rightarrow$2)-beta-D- glucopyranosyloxy-machaerinic acid gamma-lactone (5), and
A-homo-3a-oxa-5 beta-olean-12-en-3-one-28-oic acid (6), respectively. The complete assignment of the 1H and 13C resonances of 1, 2, 4 and 6 and of the peracetate of 5 were achieved by means of 2D-NMR studies.

190. **Ayele Negatu, Siv Ahrne and Goran Molin. Temperature-Dependent Variation in API 50 CH Fermentation profiles of *Lactobacillus* species. J. Current Microbiology. 2000; 41:21-26.**

**Abstract**

API 50 CH fermentation profiles of 45 Lactobacillus, one Atopobium, and three Weissella strains incubated at 30 degrees C and 37 degrees C were evaluated. Atopobium uli and ten species of Lactobacillus showed stable patterns despite the change in temperature. The rest of the type strains showed discrepancy between the two incubation temperatures: 18 strains lost, 12 additionally fermented another sugar, and 7 others fermented a different one in lieu. The variation was maximum in *L. delbrueckii* subsp. *delbrueckii*. L. *male* fermentans failed to ferment any of the substrates at 37 degrees C. Majority of the food and plant-associated strains (mainly heterofermenters) retained distinctive traits at 30 degrees C, while most of the animal-associated strains (mostly homofermenters) did so at 37 degrees C. No general trend was observed; 30 degrees C appeared to promote heterofermentation, while 37 degrees C favored homofermenters. Use of API 50 CH profiles for taxonomic purpose in most lactobacilli appears reproducible if a specific temperature for a species is strictly followed.


**Abstract**

**Aim:** The study was carried out to assess the agreement of API 50 CH fermentation data of food lactobacilli with their RAPD profiles to determine whether the system could be used alone as a reliable taxonomic tool for this genus.

**Methods:** API 50 CH, RAPD and DNA:DNA reassociation data for 42 lactobacilli from *tef* and *kocho* were compared with 30 type strains. Discrepancies were observed between the three methods in assigning strains of *Lactobacillus plantarum*, *Lact.fermentatum*, *Weissella minor* and *Lact.gallinarum*, and *Lact.fermentatum*, *Lact.amylophilus*, *Lact.casei* subsp.*pseudoplanatarum* and *Lact.rhamnosus*. DNA reassociation data agreed well with RAPD results.

**Conclusion:** API 50 CH profiles should be complemented with molecular genetic results for effective identification in *Lactobacillus*.

**Significance and Impact of the study:** The study suggested less dependability of metabolic data alone as an identification tool.

Abstract
A longitudinal study was conducted during 1994-1996 among elementary school children aged 6-14 years in Awassa, south Ethiopia. The aim of the study was to compare the efficiency of varying doses of oral iodized oil (200mg and 400mg) on thyroid function. The study included clinical examination of goiter, biochemical tests for thyroid function, and assessment of nutritional status of the children. A total of 110 children were randomly assigned into high or 400mg (n=53) and low or 200mg (n=57) dose groups for administration. After 13 months of intervention 42% goiter reduction was noted in the 200mg group while 49% regress of goiter was observed in the 400mg group. The difference was not statistically significant (p>0.05). There were no significant differences (p>0.05) in serum concentrations of T3, T4 and TSH between the two dose groups before or after administration. These clearly indicate that the two graded doses of oral iodized oil have the same effect on thyroid function and goiter reduction.


Abstract
A review of the information on the HIV epidemic in Ethiopia is important to guide policy and action. Published and unpublished reports and surveillance data from records of governmental and non-governmental institutions were examined to assess the extent of the epidemic. It appears that the HIV/AIDS epidemic has affected a large segment of the urban population. Surveillance data from pregnant women attending antenatal clinics indicate a decreasing trend in the prevalence of HIV in Addis Ababa. Similarly, data from blood donors from the majority of transfusion centers in the country indicate a decrease in prevalence. However, further studies will be required to establish the validity of these findings. Currently available data are not adequate to accurately measure the level of infection in rural areas where 85% of the populations live. Outside of Addis Ababa, in places where ANC-based sentinel surveillance is operational, the systems are not fully supported by quality control. Thus, there are concerns regarding the validity of reported results. The impact of HIV/AIDS epidemic in Ethiopia needs to be further quantified both in its burden of diseases and its impact on the urban and rural economy and society. It is, therefore, important that effort and adequate resources are put into strengthening surveillance systems.


Abstract
A study was conducted in the Ethio-Swedish Children's Hospital and different schools and kindergartens in Addis Ababa to determine the prevalence of bacterial agents that are associated with acute respiratory infection in children from 1998-1999. A total of 883 subjects were studied, out of which 77% were cases from the Ethio-Swedish Children's Hospital and 23% were controls from different schools and kindergartens. From each case and control throat and nasopharyngeal specimens were collected. Culture and different biochemical tests were used to isolate the potential bacterial pathogens. Clinical findings like cough, difficult breathing and fever were correlated with laboratory findings. S. pneumoniae and H. influenzae type b were the most commonly isolated bacteria in both throat and nasopharyngeal specimens; 74% and 70% in the cases and 2% and 5% in the control groups, respectively. This paper discusses the association between throat and nasopharyngeal carrier ship of bacteria and acute respiratory infection in children in Addis Ababa.


Abstract
A study was conducted in Gondar, North-Western Ethiopia, during 1997-1998 to determine the prevalence of bacterial etiologic agents of acute respiratory infection (ARI) in children. A total of 390 subjects were studied out of which 63% were cases from Gondar Hospital and Gondar Health Center and the rest (37%) were controls from different schools and kindergartens in Gondar Town. From each case and control throat and nasopharyngeal specimens were collected and cultured and biochemical tests done to isolate the bacterial etiologic agents of the disease. Clinical findings, such as cough, raised respiratory rate, difficult breathing, and fever were correlated with laboratory findings. S. pneumoniae and H. influenzae type b were the dominant isolated pathogens in both throat and nasopharyngeal specimens obtained from 71% and 68% of the cases and 5% and 1% of the controls, respectively. About 20% of the cases had diarrhea as concurrent illness. Even though different bacteria are known to cause ARI, S. pneumoniae and H. influenzae type b were found to be the dominant etiologic agents of acute respiratory infection. This paper discusses the association of bacteria isolated with acute respiratory infection in children in Gondar.


Abstract
Parasites and bacterial pathogens of fish at Lake Ziway, during 1996B97 were studied. A total of 613 fish were sampled. These included 495 Nile tilapia (Oreochromis niloticus), 75 Catfish (Clarias gariepinus), 24 Barbus species, 11 Tilapia zillii and 8 carp species. The fish were thoroughly examined both externally and internally for the presence of parasites and lesions and samples were taken for bacteriological investigations. Among the bacteria, Edwardsiella
tarda, (new geographic record) isolated from the liver of one O. niloticus and kidney of another carp species is known to be pathogenic to fish. On the other hand Shigella species, Escherichia coli, Citrobacter, Klebsiella oxytoca, and Yersinia enterocolitica were the major bacteria identified from the apparently healthy fish. The major parasites identified included Contracaecum species from 77 (15.56 %) of O. niloticus, 3 (27.27%) T. zillii, 4 (5.33%) C. gariepinus and 2 (8.33%) Barbus species. Clinostomum species were recovered from the branchial cavity of 45 (9.09%) Oreochromis niloticus, 2 (18.18%) Tilapia zillii and 3 (4.00%) C. gariepinus. Only 1 Euclinostomum species (new geographic record) was recovered from the branchial cavity of O. niloticus. Moreover 13 (17.33%) C. gariepinus were carrying Amplicaecum species in their mesentery and one C. gariepinus was positive to Bothriocephalus species. The significance of these parasites and bacterial pathogens as causes of diseases to fish is discussed.

**Key words:** Bacteria, Edwardsiella tarda, Fish disease, Lake Ziway, Parasites.

---


**Abstract**

The antibiotic sensitivity profiles of a collection of Aeromonas salmonicida isolates obtained from a range of geographical locations in Scotland was investigated. The investigation was part of a collaborative study to characterize A. salmonicida on a range of parameters which include cytotoxicity, virulence, autoagglutination and outer membrane protein profiles. Twenty eight isolates, including A. salmonicida focus strain and A. salmonicida 1102, were subjected to antimicrobial sensitivity testing of 11 antimicrobial agents by a disc diffusion method and an agar dilution method to determine minimum inhibitory concentrations (mic's). The semi-quantitative results of the disc test were confirmed and a more precise value obtained by the second method. Seven different sensitivity patterns were detected. All the 12 isolates which were resistant to oxolinic acid were found to be resistant to the 5 antimicrobial agent’s oxytetracycline, oxolinic acid, sulphamethoxazole and the potentiated-sulphonamides Romet-30 and co-trimoxazole.

**Key words:** Aeromonas salmonicida, antimicrobial, disc diffusion, minimum inhibitory concentration, resistance

---


**Abstract**

We conducted a community-based cluster sample survey of rubella sero-epidemiology in Addis Ababa, Ethiopia in 1994. Among 4666 individuals for whom complete data were available, rubella antibody prevalence was 91% (95% confidence interval: 90, 92). On multivariable analysis, sero-prevalence was lower among individuals who were resident in Addis Ababa for 1 year or less. Approx. 50% sero-prevalence was attained by age 4 years, and the estimated average age at infection was 5.2 years. The highest age-specific force of infection was
estimated to occur in 5- to 9-year-olds. The early age at infection corresponded with a low estimated incidence of congenital rubella syndrome (CRS) of 0.3 per 1000 live births, equivalent to nine cases of CRS in 1994. The predicted critical level of immunity for elimination of rubella via vaccination was 85-91%, requiring 89-96% coverage with a vaccine of 95% effectiveness. Unless very high coverage of rubella vaccine could be guaranteed, the introduction of childhood vaccination could increase the incidence of CRS in Addis Ababa.

http://www.bioline.org.br/request?cs00013

Abstract
Lathyrus sativus is an economically important legume crop cultivated for food and forage in Asia and Africa. The use of this hardy drought tolerant and high yielding crop, however, has been limited because of a neurotoxin, α-N-oxalyl-L-β, α-diaminopropionic acid (ODAP) in the seeds. The objective of this study was to increase the genetic diversity of L. sativus by inter specific hybridization with wild Lathyrus species devoid or with very low ODAP content. This would in turn assist to study the biochemical and genetic mechanisms which control the biosynthesis of ODAP. L. sativus was crossed with 12 wild Lathyrus species. Except for the reciprocal crosses of L. sativus and L. pseudo-cicera, others failed to develop viable seeds. In several of the inter specific hybrids, pod development was observed but embryos aborted during early stages of development. Embryo culture was attempted to rescue these immature embryos. The response of the inter specific hybrid embryos to in vitro culture varied. Cell proliferation and callus induction were observed in most of the combinations, and mature plants were regenerated from immature embryos of a cross between L. sativus (male parent) and L. cicera (female parent) both of which contain ODAP. However, it is expected that, with few modifications, this method will be useful in other inter specific hybrid combinations of Lathyrus.

Keywords: Hybridization, Lathyrus, lathyrine, Neurotoxin, ODAP


Abstract
Two new bisdesmosidic triterpenoid saponins, i.e. 1 and 2, were isolated, besides the three known saponins 3–5, from the MeOH extract of the aerial parts of Achyrantes aspera Linn. (Amaranthaceae). Their structures were elucidated as β-D-glucopyranosyl 3β-[O-α-L-rhamnopyranosyl-(1→3)-O-β-D-glucopyranuronosyloxy]machaerinate (1) and β-D-glucopyranosyl 3β-[O-β-D-galactopyranosyl-(1→2)-O-α-D-glucopyranuronosyloxy]machaerinate (2) by NMR spectroscopy, including 2D-NMR experiments (machaerinic acid=3β,21β-dihydroxyolean-12-en-28-oic acid). The other saponins were identified as β-D-glucopyranosyl 3β[O-α-L-rhamnopyranosyl-(1→3)-O-β-D-
glucopyranuronosyloxy]oleanolate (3), \( \beta \)-D-glucopyranosyl 3-\( \beta \)-[O-\( \beta \)-D-galactopyranosyl-(1 → 2)-O-\( \beta \)-D-glucopyranuronosyloxy]oleanolate (4), and \( \beta \)-D-glucopyranosyl 3\( \beta \)-[O-\( \beta \)-D-glucopyranuronosyloxy]oleanolate (5) (oleanolic acid=3\( \beta \)-hydroxyolean-12-en-28-oic acid).


Abstract
A cross-sectional study was done from March to May 1997 in four selected slum kebeles (villages) of Addis Ababa in which nutritional status of 758 children aged 6 to 36 months was examined and stratified into malnourished and well nourished groups. Analysis of hygiene and health seeking practices of randomly selected households of the two sets of children determined practices that significantly exacerbate childhood malnutrition. The rates of immunization for the malnourished (80.2%) and well nourished households (77.6%) were practically the same. No significant difference was found in the prevalence of home treatment or food withholding habits at times of diarrhea episodes between the two groups. The study established six variables to predict childhood malnutrition in the slum section of Addis Ababa: 1) presence of child waste inside house (Odds Ratio = 7.44; \( p < 0.0001 \)), 2) diarrhea treatment at the hospital (OR = 0.47; \( p < 0.05 \)), 3) prolonged storage of cooked foods (OR = 2.86; \( p < 0.05 \)), 4) feeding with washed hands (OR = 0.44; \( p < 0.01 \)), and 5) poor handling of drinking water (OR = 3.18; \( p < 0.01 \)) and 6) foods (OR = 3.52; \( p < 0.01 \)). Hence strong and sustainable advice with a view of changing the behaviors of households towards good personal and household hygiene practices, and increased utilization of health settings is recommended as these may limit the overall success of public health programs.


Abstract
Objective: To study the effect of the essential oil of Trachyspermum ammi for its in-vitro anti-fungal activity.

Methods: Fruits of Trachyspermum ammi were steam distilled and the essential oil was separated from the aqueous layer using a reparator funnel and dried using anhydrous sodium sulfate (Na\(_2\)SO\(_4\)). Then, the antifungal effect of the oil was screened on moulds (Aspergillus niger, A. flavus), yeasts (Cryptococcus neoformans) and dermatophytes (Epidermatophyton floccusum, Microsporum canis, Trichophyton rubrum and Trichophyton mentagrophytes) using the dilution assay method.

Results: The antifungal activity that has assayed for the essential oil from Trachyspermum ammi was found to inhibit the growth of all test organisms at a concentration of 0.2% and above which indicates its strong antimicrobial activity against yeasts, moulds and dermatophytes.

Conclusion: From the MIC determination, it can be concluded that the essential oil from Trachyspermum ammi possessed strong antifungal activity similar to some commercial antifungal agents. The efficacy of the oil at this concentration could also be taken as a good indicator of considering the oil as candidate for further study.
Key words: antifungal, Dematophytes, essential oil, molds, Trachyspermum ammi, yeasts


Abstract

Background: Iron deficiency is the most common micro nutrient deficiency. The major cause is an impaired absorption of non-heme iron as a result of interference of phytate and polyphenols. The aim of this study was to determine the effect of phytic acid and polyphenols on iron bioavailability in lactic fermented and unfermented cereal tef grains.

Methods: Iron bioavailability was measured using the extrinsic radio iron tag method. Radiation ($^{59}$Fe) from the prepsin-pancacin-bile salts digestion mixture which diffused across a 8000-to 10,000 molecular weight cut-off semi permeable membrane was used as an indicator of bio-available iron.

Results: Brown tef contains high amount of polyphenols, 18-fold as much as in white tef flour. Preparation of white and brown cereal tef in to unfermented meals did not have a significant effect on iron bioavailability. Lactic fermentation of white tef increased iron bioavailability from about 4% to 45%. The increase in bio-available iron was strongly related to the enzymatic degradation of phytic acid ($p<0.05$). The reduction of phytic acid and polyphenols was about 60 and 63%, respectively, in brown tef Injera. Brown tef showed a minor increase in bio-available iron after fermentation, ascribed to the inhibitory effect of polyphenols (both on iron and an enzymatic hydrolysis of phytic acid). Cereal tef-based unfermented meals were found to contain high amount of total iron but of low bioavailability.

Conclusion: Estimation of the amount of bio-available iron confirmed inadequate iron nutrition from such meals. Dietary modifications by traditional processing techniques such as lactic fermentation of cereal tef is, therefore, likely to improve iron nutrition significantly.

Key words: Iron bioavailability, Phytic acid, Polyphenols, Tef


Abstract

Background: Stunting is highly prevalent in Ethiopia and many other developing countries but the reason for it is poorly understood. Zinc is essential for growth but diets in such countries often do not contain zinc in sufficient quantity or of sufficient bioavailability. Thus zinc deficiency may play a major role in stunting. The aim of the study was to investigate whether the low rate of linear growth of apparently healthy breastfed infants in a rural village in Ethiopia could be improved by zinc supplementation.

Methods: A randomized, double-blind, placebo-controlled trial was done on apparently healthy breastfed infants aged 6-12 months. 100 non-stunted (length-
for-age, Z score < -2) were matched for age and sex with 100 randomly selected stunted (> -2) infants. Infants, both stunted and none stunted were matched by sex, age (within 2 months) and recumbent length (within 3 cm) for random assignment, to receive a zinc supplement (10 mg zinc per day, as zinc sulphate) or placebo, 6 days a week for 6 months. Anthropometric measurements were taken monthly, data on illness and appetite were collected daily, and samples of serum and hair were taken at the end of the intervention for the analysis of zinc. **Findings:** The length of stunted infants increased significantly more (p<0.001) when supplemented with zinc (7.0 cm [SE 1.1]) than with placebo (2.8 cm [0.9]); and the effect was greater (p<0.01) than in non-stunted infants (6.6 [0.9] vs. 5.0 [0.8] cm for the zinc and placebo groups respectively, p<0.01). Zinc supplementation also increased the weight of stunted children (1.73 [0.39] vs. 0.95 [0.39] kg for the corresponding placebo group, p<0.001) and of non-stunted children (1.19 [0.39] vs. 1.02 [0.32] kg for the corresponding placebo group, p<0.05). Zinc supplementation resulted in a markedly lower incidence of anorexia and morbidity from cough, diarrhea, fever, and vomiting in the stunted children. The total number of these conditions per child was 1.56 and 1.11 in the stunted and non-stunted zinc supplemented children versus 3.38 and 1.64 in the stunted and non-stunted placebo-treated children, respectively. At the end of the intervention period, the concentrations of zinc in serum and hair of stunted infants, who had not been supplemented with zinc, were lower than the respective concentrations of zinc in serum and hair of their non-stunted counterparts. **Interpretation:** Combating zinc deficiency can increase the growth rate of stunted children to that of non-stunted infants in rural Ethiopia. This would appear to be due, at least in part, to reduction in morbidity from infection and increased appetite.


**Abstract**

Recent thymic emigrants can be identified by T cell receptor excision circles (TRECs) formed during T-cell receptor rearrangement. Decreasing numbers of TRECs have been observed with aging and in human immunodeficiency virus (HIV)-1 infected individuals, suggesting thymic impairment. Here, we show that in healthy individuals, declining thymic output will affect the TREC content only when accompanied by naive T-cell division. The rapid decline in TRECs observed during HIV-1 infection and the increase following HAART are better explained not by thymic impairment, but by changes in peripheral T-cell division rates. Our data indicate that TREC content in healthy individuals is only indirectly related to thymic output and in HIV-1 infection is mainly affected by immune activation.

Abstract
In this study, we have investigated the diversity of the current HIV-1 strains circulating in Addis Ababa, Ethiopia; in addition, we have evaluated the applicability of peptide enzyme-linked immunosorbent assay (ELISA) and heteroduplex mobility assay (HMA) for HIV-1 sub typing. Previous studies have indicated that HIV-1 subtype C is the major subtype present in HIV-positive samples collected from various risk groups between 1988 and 1995 in Addis Ababa. To assess the possible influx of new HIV-1 subtypes, 150 commercial sex workers (CSW) reporting in 1997 to two Health Centers in Addis Ababa were enrolled in an unlinked anonymous cross-sectional study. Sub typing was performed according to the World Health Organization algorithm of peptide ELISA, followed by HMA and DNA sequencing. As a result, the HIV-1 prevalence among these CSWs was found to be 45% (67 of 150). Of the 67 samples, 66 contained HIV-1 of subtype C and only one was of subtype D. This confirms the persistent overall presence of HIV-1 subtype C in Addis Ababa and a low influx of other subtypes into this location.


Abstract
This paper reports the prevalence of intestinal helminthic infections among 101 Rattus collected in Addis Ababa, from November, 1996 to December, 1997. Examination of faecal samples from each rat by the for mol-ether concentration technique revealed that 44/101 (43.6%) of the rats were positive for a single intestinal parasite: 31/101 (30.7%) for Hymenolepis diminuta, and 13/101 (12.9%) for Hymenolepis nana. Double infection was recorded in 7/101 (7%). Among the double infection, 3% were infected with H. diminuta and H. nana, and 4% with H. diminuta and Syphacia obveleta. H. diminuta was the most frequent followed by H. nana. S. obveleta was found only in association with H. diminuta. The infection rates for cestodes in the present study were compared with the rates reported for cities in other countries. These findings suggest that household rats could be potential sources of human infections in the areas studied.

Key words/phrases: Hymenolepis diminuta, H. nana, Syphacia obveleta, household rats, Addis Ababa


Abstract
BACKGROUND: In a country with rapidly spreading HIV epidemic information regarding HIV and TB Co-infection are lacking.
OBJECTIVES: To determine the prevalence of HIV infection in a representative sample of sputum-positive tuberculosis patients.

METHODS: A cross-sectional survey whereby blood sample was collected from 236 consecutively coming smear positive pulmonary tuberculosis patients for HIV testing. This study, which involved all the health centers in Addis Ababa, was carried out during August 1, 1998 to the end of December 1998.

RESULTS: Of the 236 blood samples collected, 107(45.3%) were HIV positive. Among the HIV positives, 66 (61.7%) were male and 41(38.3%) females. The HIV-TB co-infection was highest in the age group 20-49 and the largest number of TB co-infection (75% of all such co-infection) was found in the 20-39 age groups. There was no significant difference between the HIV positive and negative TB patients concerning to other socio-demographic factors or presenting symptoms.

CONCLUSION: The prevalence of co-infection appeared to have increased compared to previous studies, 6.6%, 20 & 25% and 44.4% in 1990, 1995, and 1996, respectively. This trend may have a serious impact on the control of tuberculosis. Coordinating strategies of the TB and HIV control programs is recommended.


Abstract
Since the introduction of multidrug therapy for leprosy patients, the integration of leprosy control in the general health service (GHS) system has been an issue of debate. In Ethiopia, the present policy stresses integrated management of diseases. In spite of the policy, however, leprosy control was a vertical program until 1998 in most parts of the country. A descriptive cross-section study was conducted in the southern region of Ethiopia from October 1996 to March 1997 to determine the levels of involvement of the GHS staff and to identify obstacles to their involvement in the management of leprosy patients. Through a written questionnaire, data were collected from 240 GHS staff, including doctors, nurses and health assistants. It was found that 6% of the GHS staff was involved in leprosy control activities, mainly case finding and health education. Negative attitudes toward leprosy workers were held by 13% of the GHS staff while 40% had intermediate attitudes and the remaining 47% had positive attitudes. Statistically significant differences were found with regard to the level of knowledge among different health professionals, type of health institutions and years of service. The levels of involvement, knowledge and attitude of GHS staff showed that lack of integration and training were core problems. Hence, policy makers should give due attention to promoting the involvement of the GHS staff by integrating the program into the GHS system using the approach already in place in certain parts of the country.

Abstract
Three bisdesmosidic saponins, 20-hydroxyecdysone, and quercetin-3-O-β-D-galactoside were isolated from the methanol extract of the aerial parts of Achyrantes aspera L. (Amaranthaceae). Their structures were established on the basis of NMR spectroscopic analysis; the complete ¹H and ¹³C assignments of the compounds were achieved by means of 2D NMR studies.

Keywords: Saponins; NMR spectroscopy; Natural products; Structure elucidation.


Abstract
A cross-sectional study was conducted in Aynalem village, Tigray, in April 1997 on a total of 330 under-five children. Results from nutritional status assessment and stool examination for seven common enteric parasites are presented. The prevalence of stunning, wasting and under-weight were 45.7%, 7.1%, and 43.1% respectively. The prevalence of low weight-for-age and stature-for-age were significantly associated with the age-group of children, (x² = 41.9, p<0.01 and x² = 47.3, p<0.01), respectively. The overall prevalence infection (with one or more parasites) was 48.1% and it was linearly associated with age-group of children (x² = 18.1, p<0.01). Overall parasite prevalence ranged from the highest (16.3%), among 36-48 months old children to the lowest (1.4%) among the 6-12 months old children. The highest proportion of those children positive for one or more parasites harbored Entameba histolytica (18.3%) followed by Hymenolopis nana (17.3%), Giardia lamblia (7.7%) and Ascaris lumbricoides (5.8%). Fewer proportions 1.9%, 1.0%, and 1.0%, harbored Strongloides stercoralis, Schistosoma mansoni, and Entrobius vermicularis, respectively. There was no statistically meaningful association between age group specific prevalence of malnutrition and the prevalence of enteric infections. The results from this study indicate that both malnutrition and enteric infections exist to a level of public health significant in the area probably interacting synergetically and with other socio-economic and dietary factors. Long and short term measures necessary to alleviate the problem are discussed.


Abstract
Objectives: To identify determinants of child stunting and its effects on development.

Methods: A cross sectional study was employed on 231 study subjects, between March and April 1996, in Zigababoto village, located about 195 km, south of
Addos Ababa. Two hundred and thirty-one children aged 6-59 months and their respective biological parents were randomly selected. Data on all variables presumed to affect the child growth and development were determined using anthropometric indices. The milestones of early child development were determined using the local standard and compared with nutritional status and child development characteristics such as age at weaning, sitting, crawling, standing, controlling the bladder, walking and dressing without support. The chi-square statistics were used for testing statistical significance and p<0.05 was considered as level of significance.

Results: The overall prevalence of child stunting for children aged 6-35 months was 47.4% and for children aged 36-39 months was 45.4%. the prevalence varies significantly with education of parents (OR=0.41, 95% CL:0.23, 0.75); P=0.002, child care givers (OR=0.45, 95% CL: 0.24, 0.81); P=0.004 and income of households (OR=1.38, 95% CL: 1.20, 3.34). the prevalence of stunting varied significantly by ages of weaning and sitting (OR=1.88 95% CL: 1.20, 2.79), P=0.003, by age of crawling (OR=0.18 95% CI: 0.41; 0.65) and by ages of dressing (OR= 0.43, 95% CL: 0.20, 0.94) P=0.02. however, the prevalence of stunting in relation to ages of standing, ages of dressing and ages of controlling bladders did not show any statistical association (P>0.05).

Conclusion: The early child development being periods of exposure to various forms of malnutrition and related complications, more attention should be given to child care including diets and mother-child psychological interaction starting from early pregnancy to preschool periods. Furthermore, implementation of similar surveys in similar geographic areas with seasonal variation is suggested to acquire a more general overview in the light of the determinants of milestone of early child development.

Key words: Anthropometric measurements, Stunting, Child development, Child developmental milestones.


Abstract
The effects of rich sources of vitamin A and iron are paramount, but their utilization and application are unknown. This study therefore, is intended to assess knowledge and attitude of the community to curb down the existing traditional misconceptions and to promote integrated prevention of malnutrition. A cross-sectional study was conducted between September and October 1998 in two districts of North Gondar to assess the level of knowledge on the occurrence of common deficiencies mainly linked with limited utilization and application of rich source of vitamin A and iron. Data were collected from 400 subjects (280 females and 120 males). It is revealed that the overall level of knowledge respondents with respect to the deficiencies of iron and the rich sources of vitamin A as cause for nutritional anemia, night blandness, and complications of measles accounted for 44.1%, 47.1% and 36.3%, respectively. Similarly, the level of attitude with regard
to both deficiencies as causes for nutritional anemia, night blindness and complication of measles accounted for 48.5%, 31.9%, and 22.2%, respectively. Results differed significantly by age, educational status, household income, and occupation (p<0.05). In addition, the rates of negative responses were found to be very high for all variables. It is suggested that continuous education on health and nutrition directed to the rich sources of vitamin A and iron, such as dark green leafy vegetables, be instituted to change the existing social behavior of the community to step-up the prevention of malnutrition in Ethiopia. Further study in carefully mapped communities is also recommended.


Abstract

Objective: The purpose of this study was to provide baseline health educative information profile in three geographically different sites related to participants’ perception of risks associated with tuberculosis.

Study design: A cross sectional survey with analytical components.

Settings: Kebeles or Urban dweller’s associations in Addis Ababa and Debubirhane, Semi-urban villages in Chacha and its surrounding rural settings, North Shoa.

Study subjects: One thousand five hundred and ninety two participants’ ≥ 15 years of age.

Main outcome measures: Comparative analysis of participants’ perceptions of risk and practices about M. tuberculosis.

Methods: A community based interview using a pretested and semi structured questionnaire.

Findings: About 1592 subjects were enrolled between June and July 1999 in this study. The majority of the participants perceived tuberculosis infection as dangerous and contagious. Most of the participants perceived TB against actual means of transmission and contiguity. This perception accounted for 28.8%, 24.7% and 20.7%, in urban, semi-urban and rural settings, respectively among male participants, whereas it accounted for 39.1%, 28.3% and 23% among females, respectively. However, the better educated and those with household income of ≥ 501 Birr in rural settings showed more willingness to participate in care giving to TB patients than other settings.

Conclusion: This finding showed incorrect perceptions of risks of the disease and cares giving practices to TB patients in all settings. Recommendations are discussed about urgency and the need to evaluate and integrate a well structured health education in similar pilot areas with the national AIDS Control Program. There is also a need to evaluate the outcome and strengthen the existing Tuberculosis management in similar settings.

Key words: Tuberculosis, Risk, Knowledge, Attitude

Abstract

T-cell proliferation is an important in vitro parameter of in vivo immune function and has been used as a prognostic marker of human immunodeficiency virus type 1 (HIV-1) disease progression. The proliferative capacity of T cells in response to various stimuli is commonly determined by a radioactive assay based on incorporation of [(3)H] thymidine ([(3)H] TdR) into newly generated DNA. In order to assess techniques for application in laboratories where radioactive facilities are not present, two alternative methods were tested and compared to the [(3)H] TdR assay as a "gold standard." As an alternative, T-cell proliferation was measured by flow cytometric assessment of CD38 expression on T cells and by an enzyme-linked immunosorbent assay (ELISA) based on bromo-2'-deoxyuridine (BrdU) incorporation. Peripheral blood mononuclear cells (PBMCs), either in whole blood or Ficoll-Isopaque separated, from a total of 26 HIV-1-positive and 18 HIV-1-negative Dutch individuals were stimulated with CD3 monoclonal antibody (MAb) alone, a combination of CD3 and CD28 MAbs, or phytohemagglutinin. BrdU incorporation after 3 days of stimulation with a combination of CD3 and CD28 MAbs correlated excellently with the [(3)H]TdR incorporation in both study groups (HIV-1 positives, r = 0.96; HIV-1 negatives, r = 0.83). A significant correlation of absolute numbers of T cells expressing CD38 with [(3)H]TdR incorporation, both in HIV-1-positive (r = 0.96) and HIV-1-negative (r = 0.84) individuals, was also observed under these conditions. The results of this study indicate that determination of both the number of CD38-positive T cells and BrdU incorporation can be used as alternative techniques to measure the in vitro T-cell proliferative capacity. The measurement of CD38 expression on T cells provides the additional possibility to further characterize the proliferating T-cell subsets for expression of other surface markers.


Abstract

A comprehensive evaluative study on the impact of EPI-plus approach (vitamin A supplementation along with immunization program) and WIBS approach (EPI-plus and other non health measures) in controlling vitamin A deficiency (VAD) was conducted in Harari and Tigray regions. In each region, one EPI-plus district and one WIBS district were randomly selected. In the pre intervention survey conducted in May/June 1996, a total of 10964 children aged 6 to 72 months in randomly selected clusters of villages in the four districts were clinically examined for signs of xerophthalmia, while blood samples were collected from a sub-sample of 448 children for serum retinol analysis. In the post intervention survey conducted in May/June 1997 in the same districts and same clusters of villages, 10460 children were clinically examined for signs of xerophthalmia, and
blood was collected from a sub-sample of 580 children for serum retinol analysis. Results indicate that on the overall there is a substantial reduction in the prevalence of Bitot’s spot in both regions (about 43% reduction in Harari and 66% in Tigray). Over 4% reduction in Harari and about 30% reduction in Tigray were observed in the prevalence of children with low/deficient serum retinol levels. In Harari region reduction in the prevalence of Bitot’s spot was higher in WIBS area (about 54%) compared to the reduction in the EPI-plus district (40%). In Tigray region, however, the reduction in Bitot’s spot was almost similar in both districts (over 64% in WIBS and 70% in EPI-plus). There was a similar insignificant reduction in the proportion of children with low/deficient serum retinol level in both districts in Harari region (WIBS, 4.1% and EPI-plus, 5.1%), while the reduction in the proportion of children with low/deficient serum retinol levels in both districts in Tigray region (WIBS, 42.6% and EPI-plus, 18.2%) was significant. As there was no control group, it may be difficult to conclude with certainty that the observed significant improvement in vitamin A status is entirely due to the ongoing interventions. However the potential contributions of the two strategies of the observed improvement in vitamin A status cannot be underestimated.

Abstract

**Background:** The prevalence of anemia in pregnant women reaches 65% in South Asia and 63% in Africa. The prevalence in Ethiopia in pregnant women ranges between 23.0%-66.5%. The need of having a simple screening method for anemia is higher in a country like Ethiopia where the problem is serious, particularly in many of the rural areas. The objective of the study was to evaluate the accuracy, simplicity, and suitability in field use and cost effectiveness of the copper sulphate screening method for anemia in pregnancy against the standard cyanmethemoglobin method.

**Methods:** Based on this fact a cross sectional study was conducted to evaluate the accuracy of copper sulphate screening method for anemia in pregnancy against the standard cyanmethemoglobin method. In addition to this, the prevalence of anemia in pregnancy was determined among 168 first-time attendants of antenatal care clinic, using the hemoglobin results obtained from the standard method, at Jimma Health Center, Jimma, Ethiopia from September 30 to December 23, 1998.

**Results:** The two strengths of copper sulphate method (SP.G.1.044.and SP.G.1.049) proved to be simple and accurate in detecting a hemoglobin level <8g/dl and <11g/dl in pregnancy (sensitivity 95% and 96.2%, specificity 98.5% and 91%, positive predictive value 75% and 82.0%, negative predictive value 99.4% and 99%) respectively. The estimated cost of this screening method was six times less than the cost of the standard cyanmethaemoglobin method. The overall prevalence of anemia was 31% the rate being 19.2% and 40.0% for urban and rural residents respectively. The majority (65.3%) had moderate anemia, 28.9% mild anemia and 5.8% had severe anemia.
**Conclusion:** In this study the copper sulphate method was found to be accurate, cheap, and simple and can be recommended for screening for anaemia in pregnancy at primary health care level.

**Key Words:** Anaemia, copper sulfate, Hemoglobin, cyanmethemoglobin, Pregnancy.

### 2001


**Abstract**

Immunological values for 562 factory workers from Wonji, Ethiopia, a sugar estate 114 km southeast of the capital city, Addis Ababa, Ethiopia, were compared to values for 218 subjects from Akaki, Ethiopia, a suburb of Addis Ababa, for whom partial data were previously published. The following markers were measured: lymphocytes, T cells, B cells, NK cells, CD4^+ T cells, and CD8^+ T cells. A more in depth comparison was also made between Akaki and Wonji subjects. For this purpose, various differentiation and activation marker (CD45RA, CD27, HLA-DR, and CD38) expressions on CD4^+ and CD8^+ T cells were studied in 60 male, human immunodeficiency virus-negative subjects (30 from each site). Data were also compared with Dutch blood donor control values. The results confirmed that Ethiopians have significantly decreased CD4^+ T-cell counts and highly activated immune status, independent of the geographic locale studied. They also showed that male subjects from Akaki have significantly higher CD8^+ T-cell counts, resulting in a proportional increase in each of the CD8^+ T-cell compartments studied: naive (CD45RA^−CD27^+), memory (CD45RA^−CD27^+), cytotoxic effectors (CD45RA^−CD27^+), memory/effector (CD45RA^−CD27^+), activated (HLA-DR^+CD38^+), and resting (HLA-DR^−CD38^−). No expansion of a specific functional subset was observed. Endemic infection or higher immune activation is thus not a likely cause of the higher CD8 counts in the Akaki subjects. The data confirm and extend earlier observations and suggest that, although most lymphocyte subsets are comparable between the two geographical locales, there are also differences. Thus, care should be taken in extrapolating immunological reference values from one population group to another.


**Abstract**

**OBJECTIVE:** To trace the introduction of HIV-1 subtype C into Ethiopia based on virus diversification during the epidemic.
DESIGN: A set of 474 serum samples obtained in Ethiopia in 1982-1985 was tested for HIV-1. HIV-1 env gp120 V3 and gag or pol regions were sequenced and analyzed together with sequences from later stages of the epidemic.

RESULTS: None of 98 samples from 1982-1983, one of 193 samples from 1984, and one of 183 samples from 1985 were HIV-1 positive. Phylogenetic analysis of virus sequences from positive samples revealed that they belong to the Ethiopian C, and not the C', cluster. Analysis of 81 Ethiopian C V3 sequences from 1984-1997 revealed that the consensus sequence of the Ethiopian epidemic has been stable over time. Both the 1984 and 1985 V3 sequences, in contrast with three out of 27 (11%) of the 1988 and none out of 51 of the 1992-1997 sequences, had no synonymous substitutions compared to the reconstructed common ancestor of the Ethiopian C viruses. A highly significant correlation between sampling years of the V3 sequences and their synonymous distances to the common ancestor was demonstrated.

CONCLUSIONS: The increasing genetic heterogeneity together with stable consensus sequence of the Ethiopian HIV-1 C population demonstrates that evolution of the virus population is characterized by an unbiased expansion around a stationary consensus. Based on the rate of synonymous diversification of HIV-1 strains within the Ethiopian population, we were able to estimate 1983 (95% confidence interval, 1980-1984) as the year of HIV-1 C introduction into Ethiopia.

Key words: Ethiopia, HIV-1 epidemic, HIV-1 genetic characterization, Molecular clock, Subtype C.


Abstract
Viruses circulating in Ethiopia during the 1990s cluster with main subtype C, but a significant sub-cluster, C’, was noted in multiple analyses. This sub-cluster of subtype C(C’) was in a fifty-fifty equilibrium with the main subtype C (Abebe et al., AIDS Res Hum Retroviruses 2000; 16:1909-1914). To analyze genetic diversification within the sub-cluster of HIV-1 subtype C designated C’ in the course of the epidemic in Ethiopia, we analyzed 165 env gp120 V3 sequences obtained between 1988 and 1999. We observed a highly significant positive correlation between sampling years of individual sequences and their synonymous distances to the reconstructed common ancestor of the HIV-1 subtype C’ sub-cluster. The extrapolation of the regression line of synonymous distances back to the date when no synonymous heterogeneity was present among the Ethiopian HIV-1 C’ population allowed us to estimate 1982 (95% CI, 1980-1983) as the year of the onset of HIV-1 C’ genetic diversification and expansion in Ethiopia. These results are in agreement with retrospective epidemiological and serological data, which demonstrated the absence of an HIV-1 epidemic in the Ethiopian population before the 1980s.

**Abstract**

The wide variety and the socio-economic and dietary importance of traditional fermented milk products of Ethiopia are discussed in this paper. Information of the microbiology of these products is sparse and has relevance to those organisms associated with spoilage and to those considered desirable for fermentation. There is a clear need to improve the production of African foods and beverages [Int J. Food Microbiol. 18(1993) 85]. The objective of this review was to document traditional technology used and information on the microbiology of the products, and to identify various constraints to the development and commercialization of fermented milk products. Thereby the major problems and potential areas for improvement are pointed out. Ergo, the most important traditional product resembles yoghurt and, as the other traditional products, is prepared by “spontaneous” fermentation, commonly initiated by either “back slopping” or by repeated use of the same utensil. Other products include traditional fermented curd or *ititu*, traditional butter or *kibe*, *nitir kibe* or traditional ghee, *ayib* resembling cottage cheese, *arrera* or defatted buttermilk and *augat* or traditional whey.

222. **Anna Ferro-Luzzi, Saul S.Morris, Samson Taffesse, Tsegaye Demissie and Maurizio D’Amato. Seasonal under nutrition in Rural Ethiopia: magnitude, correlates, and functional significance. IFPRI, 2001.**


**Abstract**

Marked seasonal variability of both production and consumption is characteristic of virtually all farming systems in the developing world. Seasonal variations in food security are linked to a host of other structural and economic problems, including agricultural stagnation and poor markets and infrastructure. Such conditions prevail in a country like Ethiopia, where the decline in cereal production since the 1960s, the dearth of rural infrastructure, and poorly functioning markets are major determinants of the notorious famines that periodically afflict the country. The widespread mortality and disease that accompany these famines are well documented and understood, but less is known about the effects of seasonal energy stress in the “normal” years in between. It is therefore crucial to understand the effects of seasonal energy stress, which forms the background against which the more devastating effects of large-scale famine are drawn.


**Abstract**
**Background:** Several plants suspected of being poisonous to humans are thought to be widely prescribed as remedies in the indigenous health care delivery system.

**Objective:** We conducted this study to document local knowledge about poisonous plants and to assess if these same plants are being used in ethnomedicine as well as the extent of their utilization.

**Design:** The study was carried out in Southern Nations, Nationalities, and Peoples State of Ethiopia. A two stage stratified random sampling procedure was used in the selection of major ethnic groups (zones) and weredas (sub-district). Using open-ended questionnaires, focus group discussion involving community leaders was performed in each of the 12 selected weredas. Using structured questionnaires, individual interviews were also held in up to three peasant associations of each wereda.

**Results:** 20% of the 113 species recorded in the study area as poisonous included plants with toxic acrid milky latex which belong to the family Euphorbiaceae. Secondary data also shows ironically that member species of this family to be most important source of remedy in local medicine. The role of this group of plants in tumor promotion and the mechanisms involved are highlighted.

**Conclusion:** The importance of prospective epidemiological survey of human cancer along with investigation of initiating doses of solitary carcinogens or oncogens and co-carcinogens of the promoter type as possible risk factors of cancer associated with the utilization of Euphorbiaceae material is stressed.

**Key words:** Traditional medicine, Euphorbiaceae, carcinogensis, diterpene esters, qulqwal


**Abstract**

**Background:** Though written account is wanting, many plants exist in Ethiopia that are poisonous to both humans and livestock. Some verbal reports also indicate the presence of plant species, which are employed in criminal poisoning.

**Objective:** We conducted this study to document empirical or local knowledge on poisonous plants to help rapid identification of the source of poisoning and provision of treatment by health professionals.

**Design:** The study was carried out in Southern Nations, Nationalities, and Peoples State of Ethiopia. A two stage stratified random sampling procedure was used in the selection of major ethnic groups (zones) and Weredas (sub-district). Using open-ended questionnaires, a focus group discussion involving community leaders was performed in each of the 12 selected Weredas. Using structured questionnaires, individual interviews were also held in up to three peasant associations of each Wereda.

**Results:** 111 plants that are locally recognized as harmful to people and/or livestock because of their use as herbal remedies, food or fodder, and other reasons were documented. The inherent traits of the plants and the environmental factors contributing to the toxicity of the species and the conditions that favors
exposure of people and livestock are discussed. A few selected species that are believed to pose the greatest hazard to people were addressed in detail. A review of the active principles that are responsible for the toxicity of these plants is also presented.

**Conclusion:** In view of the ever expanding and unregulated trade in herbal products, there is a danger that the public could end up in buying unsafe preparations. The need for further intensified study in the area is therefore recommended as means of minimizing the risk.


**Abstract**

**Background:** Modern science is tending to confirm many of the beliefs of ancient cultures regarding efficiency of garlic. In this paper we report the antifungal effects of freshly pressed juice of garlic on the major pathogenic fungi.

**Methods:** Freshly pressed juice of varying concentrations of garlic was assessed for their antifungal prosperity on major pathogenic moulds, yeasts and dermatophytes. Fresh garlic was purchased; the cloves were peeled, washed, weighted and ground to obtain garlic paste. The paste was squeezed through fine gauze pads to obtain fresh garlic juice. The juice was filtered and anti-fungal susceptibility of the juice and the standard drug Nystatin were determined by using agar incorporation technique in Sabouraud Agar Medium. All the plates were inoculated with the test organisms and incubated at 250°C for up to three to seven days except for dermatophytes which were incubated for up to three weeks at the same temperature. Part of the juice was lyophilized, weighted and calculated to determine the extract concentration.

**Results:** Garlic juice was found to inhibit the growth of the standard organisms of Cryptococcus neoformans, Aspergillus niger, and the clinical isolates of A.niger at a concentration of 25µl/ml (10 mg/ml). A. flavus was inhibited at 37.5µl/ml (15mg/ml) & T. rubrum, T. mentagrophyte, M.canis, E.flocusum were inhibited at 75µl/ml (30 mg/ml).

**Conclusion:** It is concluded that freshly pressed juice of garlic has a strong anti-fungal effect on the major pathogenic moulds, yeasts and dermatophytes. Further purification and formulation of the juice would give a true antifungal activity comparable to standard antibiotics.

**Key words:** Allium sativum, antifungal, garlic, dermatophytes.


**Abstract**

A total of 267 rural scavenging chickens were examined from October 1998 to August 1999 in four woredas (districts) of the Amhara Region, Ethiopia. Of these chickens, 243 (91.01%) were found to harbor one to nine different helminth
parasites and 24 (8.99%) were free of helminth parasites. A significant difference (P < 0.01) was found between the prevalence rates of helminth parasites in the different agro-ecological zones; the highest prevalence was observed in the lowland areas. This suggests that agro-ecology has a major influence on the distribution of helminth parasites. Nematodes recovered included Heterakis gallinarum (17.28%), Subulura brumpti (17.60%), Ascaridia galli (35.58%), Cheilosporura hamulosa (0.75%) and Dyspharynx spiralis (2.62%). The principal cestode species encountered were Raillietina echinobothrida (25.84%), Raillietina tetragona (45.69%).

**Key Words:** Cestodes, Chickens, Distribution, Ethiopia, Gastro-intestinal nematodes, Parasites, Prevalence.


**Abstract**

The knowledge on traditional uses of medicinal plants in Ethiopia has mostly been passed on from generation to generation by word of mouth. This method of information conveyance has probably resulted in distortion or loss of indigenous knowledge. The present study is thus designed to document the indigenous knowledge on medicinal plants in Shirka, Central Ethiopia. An ethnobotanical survey was conducted in four peasant associations in February 1999. A total of 81 traditional healers were interviewed, and 58 traditionally used medicinal plants were collected. Of these plants, 37 were identified scientifically at specious level, five at generic level, while 16 were only known by their vernacular names. List of the plants together with their ethnobotanical information is presented. The traditional remedies were prepared either from single or more than one plant specious, and the root was predominantly used for the preparation of remedies. Almost all of these plants are included in traditional pharmacopoeia of the Northern Ethiopia, and the biomedical effects of most of them are supported by their chemical profiles as well as pharmacological and/or biological activates. The survey results suggest that extensive ethnomedical exploration in Shirka district and other parts of Ethiopia is warranted.

**Key words:** Medicinal plants, Shirka, Traditional healers, Traditional medicine


**Abstract**

**Background:** Aflatoxins are highly toxic, hepatocarcinogenic, secondary metabolites of Aspergillus species produced in most agricultural commodities stored at inappropriate temperatures and water activities. The aim of the present paper was to analyze the levels and frequency of aflatoxin contamination in samples of most commonly consumed agricultural commodities collected from various regions of the country.

**Methods:** A total of 595 food samples collected from southern peoples Nations and Nationalities, Oromia and Harari Regional States were collected and screened
for aflatoxin contamination. Commodities sampled included barely, wheat, maize, millet, sorghum, tef, pepper, peanut, broad beans and dry peas. Aflatoxins B$_1$ and G$_1$ were the only mycotoxins detected in the food samples.

**Results:** Aflatoxin B$_1$ were the predominant from, the incidence of samples containing it was 30% and then accompanied by aflatoxin G$_1$, 6%. The highest level of aflatoxin B$_1$ was observed in peanut and sorghum samples (738 and 692µg kg$^{-1}$, respectively). The highest level of aflatoxin G$_1$ found was 201µg kg$^{-1}$.

Groundnuts, sorghum and millet samples have been identified as high-risk commodities based on the incidence rate of aflatoxin contamination. Levels of total aflatoxin greater than 20 µgkg-1, were most frequently encountered in all aflatoxin positive samples of corn, sorghum, wheat, red pepper and peanut followed by barely (17%) and tef (13%).

**Conclusion:** The presence of aflatoxins in commonly consumed foods emphasizes a public health concern and the need to develop mycotoxin prevention and control strategies in Ethiopia.

**Key words:** Aflatoxin, Fungi, Mycotoxin, Aspergillus species


**Abstract**

**OBJECTIVE:** To study the prevalence and risk factors for HIV infection among sex workers of Addis Ababa, Ethiopia. Design and methods: Cross-sectional survey on socio-demographic characteristics, behaviors, and HIV serological status of sex workers attending two health centers of Addis Ababa.

**RESULTS:** HIV prevalence among sex workers was 274 of 372 (73.7%). Several factors were significantly associated with an increased risk of being HIV-infected [among others, working in 'shared rooms', high number of clients, use of injectable hormones, and positive Treponema pallidum particle agglutination (TPPA) serology], and others with a decreased risk (being born in Addis Ababa, high level of education, peer education on sex work, condom use, use of oral pill, and use of condoms for contraception). Of interest, sex workers who were using condoms for contraception were, compared with others, more likely to use condoms consistently (65 versus 24%, respectively; P < 0.001), and less likely to be HIV-infected (55 versus 86%, respectively; P < 0.001). In multivariate analysis [log-binomial model, giving estimates of the prevalence ratio (PR)], being born in Addis Ababa (PR = 0.74; 95% confidence interval (CI), 0.61-0.91), using condoms for contraception (PR = 0.73; 95% CI, 0.64-0.85), and a positive TPPA serology (PR = 1.21; 95% CI, 1.09-1.36), remained significantly associated with HIV infection.

**CONCLUSIONS:** HIV prevalence was remarkably high among sex workers of Addis Ababa. Condom use was higher, and HIV prevalence lower, in sex workers using condoms not only for prevention of HIV and sexually transmitted diseases, but also for contraceptive purpose. This finding is of particular interest for its implications for prevention strategies among sex workers in the developing world.

Abstract

Background: Wide spread of occurrence of multi-drug resistance tuberculosis is becoming a major challenge to effective tuberculosis control. Thus, it is imperative to monitor the sensitivity of anti-TB drugs regularly.

Objective: To determine the prevalence resistance to anti-TB drugs in a well established control program area in Arsi zone.

Methods: A health institution based cross-sectional study was designed in Arsi zone Oromia Region, Ethiopia. Patients who have never been treated and previously treated with anti-tuberculosis treatment: ionized, streptomycin, thiacetazone, rifampicin and ethambutol were included in the study. Culture positive specimens were tested for susceptibility testing to the anti–tuberculosis drugs using a proportion method with Loweinstein – Jensen medium.

Results: The overall resistance to one or more of the anti–tuberculosis drugs was 19.5% (38/195). Primary and acquired resistance were 18.2% (32/172) and 31.6% (6/19), respectively. Multi drug resistance tuberculosis (ionized and rifampicin) was absolutely nil in both cases.

Conclusion: A wider use of Directly Observed Treatment Short course in the area may contribute to the control of the incidence of drug resistance.


Abstract

Sulfadoxine/pyrimethamine (SP) replaced chloroquine (CQ) as the first line treatment of uncomplicated falciparum malaria in Ethiopia in 1999. Addition of CQ to SP has been indicated to increase the clinical utility of SP in patients with falciparum malaria. A randomized 14-day in vivo study was carried out in children with uncomplicated Plasmodium falciparum in central Ethiopia to study for any possible therapeutic benefits of SP/CQ combination over SP alone. Of the 109 recruited patients, 98 (89%) completed the study; 48 in the SP/CQ and 50 in the SP alone group. The reduction in fever in the SP/CQ combination group was significantly higher, during the first 3 days following therapy, than when SP alone was used. However, neither the clinical nor the parasitological responses differed significantly between the two treatment groups. The two regimens gave equally good clinical cure rates, with 46 (95.8%) for SP/CQ and 48(92%) for SP alone. There was no Early Treatment Failure (ETF) in either group; however, there were 2 (4.2%) and 2 (4.0%) Late Treatment Failure (LTF) in the SP/CQ combination and SP alone groups, respectively. The parasitological failure rate was 2 (4.2%) in SP/CQ group compared to 4 (8%) in the SP alone. Addition of CQ to SP did not improve the proportion with gametocyte on Days 7 and 14. Both regimens
resulted in an increase in gametocyte carrier rates. No major adverse effects were attributable to the combination treatment with SP/CQ although vomiting was more frequent in this case. The results reported here show that the SP/CQ combination was superior to SP alone in reducing fever in children of this endemic area. Other possible therapeutic benefits of SP/CQ combination over SP alone in this area where P. falciparum and P. vivax coexist are also discussed.

Key words: Plasmodium falciparum, drug combination, sulfadoxine/pyrimethamine, chloroquine, fever, Ethiopia.


Abstract
In vitro cytotoxic tests of the extracts of the leaves, roots and stem barks of Bersama abyssinica and the aerial parts of Artemisia afra, Artemisia rehan and Ajuga remota were carried out, in relation with the reported antimalarial activities, using the colorimetric methyl tetrazolium (CMT) assay against human leukaemia monocyte cell line, THP-1 cells. All the extracts tested at concentrations of their in vitro antimalarial activity, (IC$_{50}$ = 0.23-23 µg/ml) were not cytotoxic. The extracts of the leaves of B. abyssinica were the most cytotoxic, and the aerial parts of A. remota, the least. However, their cytotoxicity to antimalarial activity ratios was 4.5 and 3.7, respectively. The root bark extracts of B. abyssinica (IC$_{50}$ = 38 µg/ml) were about 2 times more toxic than the aerial part extracts of A. remota (IC$_{50}$ = 84µg/ml) but had the highest cytotoxicity to antimalarial activity ratio (19 vs. 3.7 respectively). The extract of A. afra (IC$_{50}$ = 64 µg/ml) was less cytotoxic than the extracts from the three parts of B. abyssinica (IC$_{50}$ of the leaves, 18 µg/ml, the root bark, 38 µg/ml, and the stem bark, 32 µg/ml). The cytotoxicity and antimalarial activities of the various extracts were compared and their significance as antimalarials was discussed.


Abstract
OBJECTIVE: To gain a better understanding of the attitude and social consequences of tuberculosis (TB) in Addis Ababa, Ethiopia.
DESIGN: A cross sectional survey using a structured questionnaire and a qualitative study based on the focus group discussion (FGD) technique.
SETTING: Eight different kebeles (urban dwellers' associations) of six woredas (next higher administrative level to kebele).
SUBJECTS AND METHODS: Seven hundred and three participants, comprising 326 males and 377 females were interviewed using the written questionnaire and 36 recent and current TB patients through focus group discussion. Data were analyzed using SPSS/PC statistical package. The proportions were compared using univariate and bivariate analyses to show the
frequency distribution and evaluate the relationship among different variables. In FGD, topics relevant to the research questions were identified, sorted and analyzed. Conclusions were then formulated.

**MAIN OUTCOME MEASURES:** Attitude of participants towards TB and its victims and social consequences of being a TB patient.

**RESULTS:** Eighty three per cent of the respondents were aware that TB is a disease transmitted from one person to another and 80.1% perceived TB as an extremely severe disease. Of the total, 81.5% answered that TB is caused by cold, 69.0% feel that TB patients are not accepted in the community and 78.3% fear physical contact with TB patients. Most participants of the FGD sessions agreed that TB is a very dangerous, contagious but curable disease and the community has a generally negative attitude towards them. They also think that TB is associated with HIV/AIDS in the society. These attitudes have social consequences particularly the stigmatization and social isolation of TB patients. Four hundred and four (57.5%) respondents were found to be in favor of the short course chemotherapy against 226 (32.1%) choosing the longer course. Clinical improvement and unavailability of some drugs or their cost were the first and second main reasons indicated, respectively, for defaulting by respondents.

**CONCLUSION:** The perception by most respondents that tuberculosis is incurable, transmittable and associated with HIV/AIDS, led to the understanding that TB is a very dangerous disease. This, in turn, contributes to social avoidance and the resultant consequences in TB patients. Health education must be stepped-up within the TB control programme, and the psychosocial implications of TB should be given due attention.


**Abstract**

Cross-sectional studies were conducted to measure soluble viral and immunological markers in plasma in order to determine the prognostic value of these markers for HIV disease progression in Ethiopians and to see their association with cell surface markers in HIV-1-infected and none infected Ethiopians. Whole blood samples were collected from 52 HIV-1-negative Ethiopians, 32 HIV-1-positive Ethiopians with absolute CD4(+) T-cell count >200/µl and no AIDS defining conditions, and 39 HIV-positive Ethiopians with CD4(+) T-cell count <200/µl and/or AIDS defining conditions. Plasma levels of b(2)-microglobulin (b(2)m), soluble CD27 (sCD27), soluble tumor necrosis factor alpha receptor type II (sTNFR-II), IgG, IgA, IGE, and IL12 were elevated in HIV-1-infected individuals. The plasma levels of sTNFR-II, sCD27, b(2)m, IL12, and IgG were inversely correlated with numbers of CD4(+) T-cells, the proportion of naïve (CD45RA(+)CD27(+)) CD8(+) T-cells, and the proportion of CD8(+) T-cells expressing CD28 (CD8(+)CD28(+)) were positively correlated with the proportions of activated (HLA-DR(+)CD38(+))
CD4(+) T-cells, as well as activated (HLA-DR(+)CD38(+)) CD8(+) T-cells. A strong positive correlation was also observed when soluble immune markers were compared to each other. Multivariate regression analyses of soluble markers with numbers of CD4(+) T-cells showed that sCD27 is the best independent marker for CD4(+) T-cell decline in the HIV-1-infected Ethiopians. Our results indicate that measurement of soluble immune markers, which is relatively easy to perform, could be a good alternative to the quantification of T-cell subsets for monitoring HIV-1 disease progression in places where there is no facility for flow cytometric measurements.

**Key Words:** HIV-1, Ethiopians, sCD27, sTNFR-II, β₂m, IL12, IgE, IgA.

---

**235.** Tsehaynesh Messele, Tobias F. Rinke de Wit, Brouwer Margreet, Mathias Aklilu, Tsigereda Birru, Arnaud L. Fontanet, Schuitemaker Haneke and Hamann Dorte. No difference in Vitro Susceptibility to HIV Type-1 between High-Risk HIV-Negative Ethiopian Commercial Sex workers and Low-Risk Control Subject. *AIDS Res Hum Retroviruses.* 2001; 17(5):433-441.

http://www.liebertonline.com/doi/pdf/10.1089/088922201750102526

**Abstract**

Host factors such as increased beta-chemokine production, HIV-1 coreceptor expression level, and HIV-1 coreceptor polymorphism have been thought to influence susceptibility to HIV-1 infection. To determine the protective role of these factors in Ethiopians who remained HIV-1 uninfected, despite multiple high-risk sexual exposures, we studied 21 Ethiopian women who had been employed as commercial sex workers (CSWs) for five or more years. The HIV-1-resistant CSWs were compared with low-risk age-matched female controls who had a comparable CD4+ cell percentage and mean fluorescence intensity (MFI). Genetic polymorphism in the CCR5, CCR2b, or SDF-1 genes appeared not to be associated with resistance in the Ethiopian CSWs. Expression levels of CCR5 and CXCR4 on naive, memory, and total CD4+ T cells tended to be higher in the resistant CSWs, while the production of beta-chemokines RANTES, MIP-1alpha, and MIP-1beta by phytohemagglutinin (PHA)-stimulated peripheral blood mononuclear cells (PBMCs) was lower compared with low-risk HIV-1 negative controls. In vitro susceptibility of PHA-stimulated PBMCs to primary, CCR5-restricted, Ethiopian HIV-1 isolates was comparable between resistant CSWs and low-risk controls. In vitro susceptibility was positively correlated to CD4+ cell mean fluorescence intensity and negatively correlated to CCR5 expression levels, suggesting that infection of PBMCs was primarily dependent on expression levels of CD4 and that CCR5 expression, above a certain threshold, did not further increase susceptibility. Our results show that coreceptor polymorphism, coreceptor expression levels, beta-chemokine production, and cellular resistance to in vitro HIV-1 infection are not associated with protection in high-risk HIV-1-negative Ethiopian CSWs.

---

**236.** Worknesh Ayele, Makonnen Fekadu, Badeg Zewdie, Mokoro Beyene, Yosef Bogale, Kebebew Mocha and Fisseha-Tsion Gebre-Egziabher. Immunogenicity and efficacy of fermi-type nerve tissue rabies vaccine in mice and in humans undergoing
Abstract

Rabies is acute viral encephalitis that is invariably fatal following the manifestations of clinical signs. To subvert the course of the disease, rabies post-exposure prophylaxis (PEP) is widely utilized. The immunogenicity and efficacy of Fermi-type rabies vaccine produced in Ethiopia was determined in mice subjected to intracranial challenge with rabies virus, and in humans undergoing rabies PEP in Ethiopia. Mice were randomly assigned into 5 groups. Group 1 received 0.25 ml each of phenolized saline intraperitoneally for 14 consecutive days. Mice in groups 2-5 received 0.25 ml of rabies vaccine for human PEP for the same period of time. Blood samples were drawn from the retro-orbital vane of all mice on designated days for the determination of rabies virus neutralizing antibody (VNA) using the mouse serum neutralization test. Mice were subsequently challenged intracranial with rabies virus at a concentration of 64 MICLD50 90 days post initial vaccination. Rabies neutralizing antibody titers in the sera of immunized mice ranged from 4.6 to 25 IU/ml. Booster vaccine doses did not seem to induce significant increases in the immune response of vaccinated mice, all of whom withstood intracranial challenge with rabies virus. Rabies VNA was further determined in 12 patients vaccinated in accordance with the prescribed dosage of Fermi-type vaccine for human rabies PEP. Most had > 0.5 IU/ml of rabies VNA by day 14, and none detectable at day 1. In contrast to mice, booster doses of vaccine may contribute to slightly higher rabies VNA titers in humans but our small sample size, on top of significant defaulter rates in the study participants, limits our interpretation of the effects of booster vaccine doses. The results of this study are the first documentation of the efficacy and immunogenicity of the Ethiopian Fermi type nerve tissue vaccine in both humans and mice.


Abstract

A measles outbreak in December 1998 in Bedelle (vaccine coverage <40%) and two sporadic cases in Addis Ababa, Ethiopia, were investigated. Paired serum and oral fluid samples were collected 2-8 days after the onset of symptoms. A total of 53 of 55 outbreak cases and both sporadic cases were positive for serum measles virus-specific IgM. Oral fluid measles-specific IgM was positive in 71% of cases collected up to 5 days after onset and in 90% collected at 6-8 days. By contrast, 100% of oral fluid samples were positive for measles virus RNA by RT-PCR, suggesting that early collection of samples favored the detection of measles virus RNA by RT-PCR. The measles virus strain in the outbreak was identified as genotype D4. One strain from a sporadic case was also genotype D4; the strain from the other sporadic case was assigned to clade D but was distinct. The degree
of divergence from recognized clade D strains suggested that, together with three strains from the United Kingdom, it represents an additional genotype of clade D (GenBank accession numbers AF280800-280807).

Key words: Measles outbreak, Ethiopia, New genotype


Abstract
Background: The problem of malnutrition in Ethiopia is on the increase due to low agricultural production, low and inadequate food consumption and high disease burden.

Objective: To synthesize available information on nutrition assessment in Ethiopia.

Methods: Trends in nutritional status were assessed from three National Nutrition Surveys conducted in 1983, 1992, and 1998 by the Central Statistical Authority and other pocket surveys on energy malnutrition and micronutrient deficiencies.

Results: For the nation as a whole, no major progress has been made in reducing the prevalence of child malnutrition over the last 17 years. The mean prevalence of stunting (low height for age) for the regions increased from 59.8% in 1983 to 64% in 1992. The very recent survey of 1998 revealed a decline in the level of stunting, i.e., 52% compared to the previous years. The prevalence of underweight children among children aged 6-59 months increased from 37.3% in 1983 to 46.9% in 1992, and then declined to 42% in 1998. Prevalence of wasting for all the regions combined had also increased. Breast-feeding and dietary practices revealed that the problem of early stunting in Ethiopia is mainly due to delayed feeding of complementary foods in the first year of life. Pocket studies on the prevalence of micronutrient deficiencies indicate that iron deficiency anemia, iodine deficiency disorders, and vitamin deficiency are major problems of public health significance.

Conclusion: To reduce malnutrition rapidly requires focused and systematic action in the health, food security, and child and maternal care arenas. A coordinated effort of all sectors should be made to overcome the problem. Due to the lack of coordination, both in addressing the problem and addressing the basic and underlying causes, malnutrition is on the increase in Ethiopia.

2002


Abstract
Background: Malaria is one of the major public health problems in Ethiopia. Frequent epidemics and its appearance in highland areas previously known to be beyond malaria transmission upper limited are becoming common in the country.
Objectives: The objective of the study was to review and document the situation of malaria in Addis Ababa.

Methods: Records on cases of malaria seen at outpatient departments of 20 health centers in the six administrative zones of Addis Ababa were reviewed. An epidemic report compiled relatively recently was as well used as a source of additional information.

Results: Rise in the number of malaria cases treated at outpatient departments in Addis Ababa was noted from 1996 onwards. In one of the administrative Zones of Addis Ababa, Akaki and its surroundings, an outbreak of malaria was reported during 1998/9. More than three times increment of primary clinical cases of malaria was recorded during the peak of this epidemic.

Conclusion: It is believed that malaria is one of the causes of morbidity congesting health services in Addis Ababa City Administration. The epidemic at the peripheral part of the City, Akaki and its environs in 1998/9 is believed to be associated with the climate change during this period.


Abstract

Surveillance for HIV-1 prevalence and subtypes in Afar Region, Ethiopia was performed among police recruits in the year 2000, by unlinked anonymous testing. Of 408 samples tested, 26 (6.4%) appeared positive for HIV-1 antibodies. There was a trend for higher HIV-1 seroprevalence in women (9.5%, 9/95) than men (5.4%, 17/313), which was significant in one of the 5 administrative areas: Zone 4 (p = 0.01). Around the principal transportation route connecting Addis Ababa to the harbor of Djibouti there was a significantly (p = 0.03) higher HIV-1 seroprevalence of 12.7% (14/110) than elsewhere in Afar Region. In addition, 13 (34%) of the 29 administrative sub-areas (woredas) of Afar Region delivered HIV-1 positive police recruits. Prevalence of syphilis antibodies was 7.4% (30/408), increasing by age, correlating with HIV-1 positive serology (p = 0.001) and with 23.3% (7/30) active cases. Of 22 specimens sequenced, 12 had gp120 V3 regions from Ethiopian subtype C, 9 subtype C' and 1 subtype A. In conclusion, even in very remote areas in Ethiopia, such as Afar Region, the HIV-1 epidemic is established, being primarily of subtype C. Regular HIV-1 surveillances will be necessary to guide action to prevent further spread in this vulnerable area.


Abstract
Objectives: To know the status of HIV screening laboratories in different parts of the country, to identify the major problems encountered and to suggest and recommend possible solutions to the policy makers at different levels.

Materials and methods: Forty-two out of 74 government and non-government owned HIV screening laboratories were supervised in December 2001. A cross-sectional study using a detailed questionnaire and an on-site observation/supervision to assess the technical issues, safety procedures, laboratory management and other related issues to quality assurance was conducted. These laboratories were selected randomly and at least one laboratory from each region has been included.

Results: Most laboratories, 27(64.3%) were capable of performing ELISA and Rapid tests. Majority of them (62%) do not follow a specific testing algorithm, only in 50% were confirmatory tests performed, while 21% send their specimen to the regional laboratories and the remaining 29% do not confirm their results at all. In only 29% of them was safety guidelines practiced. In 58.4% and 54.7% of them, there was a shortage of reagents and protective materials, respectively. Problems related to maintenance, weak referral system, poor laboratory management, lack of follow-up resulting in delay of issuing results to clients were identified.

Recommendations: It is suggested that the problems of regional laboratories should be alleviated through collaborative approach among different stakeholders and there is a need to encourage them to fully participate in NEQUAS. Strengthening in equipment and trained human resource, and close follow-up of Regional Laboratories, timely ordering of supplies and reagents, continuous training programs on HIV screening methods, quality assurance and maintenance were recommended.


Abstract
Doesn’t have any abstract but the full article is.....


Abstract
BACKGROUND: Papaya (Carica papaya) is one of the herbal remedies, which has recently become a subject of research focus. It is used in traditional medicine for a variety of purposes besides its common anthelmintic, carminative, diuretic, oxytoxic and ant infective effects. In this paper we report the antibacterial effects of aqueous papaya seed extracts against three pneumonia causing bacteria.
METHODS: The study was conducted between November 2000 and June 2001. The antibacterial activity of the crude aqueous extract of papaya (C. papaya) seeds was investigated against specific pneumonia causing bacterial by an agar dilution technique. The growth or inhibition of the standard test microorganisms as well as clinical isolates of Streptococcus pneumoniae, Staphylococcus aureus & Klebsiella pneumoniae were determined in growth media. Fresh ripe papaya fruits were purchased from a local market and the seeds were collected, thoroughly cleaned with distilled water, sun dried, powdered, sieved with a mesh and macerated. The macerate was filtered through No.1, 18.5 cm what man filter, cooled immediately to -20 °C and lyophilized. The powder obtained was weighed, diluted with distilled water and the concentration determined.

RESULTS: All the test organisms were successfully inhibited by 11.8 mg/ml of the extract except Streptococcus pneumoniae standard test organism which was inhibited by 18.38 mg/ml of media, indicating that Streptococcus pneumoniae, clinical isolate, is the least sensitive.

CONCLUSION: Papaya (C. papaya) seed could be used as an effective antibacterial agent. Further purification and extraction of the active principle would give a true antibacterial activity comparable to standard antibiotics. Nevertheless, clinical trial on the effects of the seed is essential before advocating large-scale therapy.

KEY WORDS: Carica papaya, antibacterial, papaya, pneumonia


Abstract
The antibacterial activity of the crude aqueous extract of garlic was investigated against some pneumonia causing bacteria by an agar dilution technique. The results revealed that Streptococcus pneumoniae standard test organism was completely inhibited by 7.8 mg/ml of media and the clinical isolate of Klebsiella pneumoniae was completely inhibited by 24.38 mg/ml of media, indicating that Streptococcus pneumoniae is the most sensitive and Klebsiella pneumoniae the least. Garlic could be used as an effective antibacterial agent for these pathogenic microorganisms.


Abstract
The CD4+ T-lymphocyte count is a widely used marker of HIV disease progression. The marker also plays a crucial role in determining therapeutic interventions in HIV infections, especially with the initiation and monitoring of antiretroviral therapy and prophylactic treatment for opportunistic infections. In general, immunological studies done thus far on adult Ethiopians revealed that, healthy HIV-negative Ethiopians exhibit significantly decreased values for absolute CD4 counts than other populations. However, it remains to be illucidated.
whether Ethiopian AIDS patients develop opportunistic infections at much lower CD4 values than AIDS patients from Western countries, and whether Ethiopian HIV infected patients’ progress to AIDS more rapidly. Thus, establishing locally appropriate standard CD4 values is important in order to implement certain prophylactic or therapeutic interventions in our setting. Most of these studies are reported on international journals, which are hardly accessible to the Ethiopian medical/scientific community. The aim of this mini-review is, therefore, to provide the local scientific community and clinicians with the available information.


Abstract

Background: Rabies in Ethiopia is primarily a disease of dogs. However, many people receive post exposure anti-rabies treatment annually all over the country. Most people are at increased risk of being exposed to rabies, as man-dog contact is very common in the country. In this retrospective study, information on the status of rabies over the period of 1990-2000 is presented.

Methods: The occurrence of rabies in humans and animals was determined by reviewing the registers used for recording human and animal rabies cases and post exposure anti-rabies treatments.

Results: The information indicated that 96.2 % of the animals examined were dogs and 92% of humans who received post exposure anti-rabies treatments were due to dog bites. A total of 2172 rabid animals' brains were examined of which about 90% were dogs, 5.3% cats, 2.9% cattle and 1.9% other animals. Moreover, 322 fatal human rabies cases were recorded and 95% of these were acquired from dogs.

Conclusions: This study demonstrated the importance of rabies as a public health problem in the country. Dogs are responsible in maintaining the continuous persistence as well as dissemination of rabies in the country. Therefore, regular intervention targeted at controlling stray dogs and administration of anti-rabies vaccination campaigns is strongly recommended.


Abstract

Background: Traditional medicine is an ancient medical practice that is still widely used in prevention and treatment of various health problems in Ethiopia.

Objective: To evaluate perceptions and practices of modern and traditional health practitioners about traditional medicine in Shirka District of Arsi Zone, Ethiopia.

Methods: A cross-sectional study pertaining to the perceptions and practices of modern and traditional health practitioners was carried out in February 1999 in
four peasant associations of Shirka District. Two types of questionnaires (with closed and open-ended questions) were prepared to assess the respective practitioners. Fourteen modern practitioners and 80 traditional healers were interviewed.

**Results:** Most of the practitioners in both systems had used traditional medicine at least once in their lifetime. The indigenous knowledge surrounding traditional medicine is mainly conveyed verbally and to some extent still employs superstitious beliefs and harmful practices. To substantially reduce the drawbacks and promote its positive elements, both types of practitioners expressed their willingness to collaborate among each other and believe in the need for government support.

**Conclusion:** The knowledge surrounding traditional medicine incorporates a number of harmful practices. To make matters worse, this knowledge is mostly conveyed verbally which may result in the inevitable distortion of original information leading to the expansion of more and more harmful practices. Therefore, the need for more effort of recording the knowledge is stressed. Government support and coordinated effort among the various institutions are emphasized for promotion and development of traditional medicine.


**Abstract**
The incidence rate of tuberculosis was studied among the staff of the Tuberculosis Demonstration and Training Centre (TDTC) of Addis Ababa between 1989 and 1998, by reviewing all clinical charts of the 175 staff members for evidence of tuberculosis. During the study period, 24 cases of tuberculosis were diagnosed, including 12 who were bacteriologically confirmed. The incidence rate of tuberculosis increased from 1,695 per 100,000 person-years (py) in 1989 to 5,556/100,000 py in 1998 (test for trend, P < 0.001). Urgent measures are required for better protection of the staff from human immunodeficiency virus infection and tuberculosis.

**Key words:** Human Immunodeficiency Virus, Tuberculosis, Opportunistic infections, Noncomial transmission, Africa.


**Abstract**
The study on the prevalence of rabies was conducted on a retrospective data gathered from EHNRI rabies diagnostic laboratory Addis Ababa, in the years 1979-1987. During this period a total of 8036 animals were brought to the rabies diagnostic laboratory. Ninety one percent (7329) of these animals were dogs. The remaining 8.8% (707) comprised of cats, domestic animals (donkeys, cows, sheep) and wild animals (monkeys, jackals and hyenas). Out of 7329 dogs
examined 832 were positive for rabies. Dogs accounted for the majority of animal rabies (94.01% of the total positive animals). The remaining 5.99% (53) of the animals diagnosed with rabies comprised of cats, domestic animals and some wild animals. A total of 15,940 people were given post exposure anti-rabies prophylaxis treatment that came from different parts of the country in the years 1979-1987. The prevalence rates of rabies were found to be higher soon after dogs' breeding seasons. Such an observation indicates that among dogs infection, transmission through biting is significant during the breeding season. However, despite the high incidence of rabies in Ethiopia, only 320 people were reported to have died of rabies in the years 1979-1984. This supports the hypothesis that there is a lack of appropriate reporting system on prevalence of rabies and its impact on humans in Ethiopia.


Abstract
To evaluate a simple and rapid testing strategy to diagnose HIV infection in Ethiopia, we subjected a panel of 688 sera with known HIV serologic status (confirmed by ELISA/WB or double ELISA) to 3 rapid assays: Determine HIV-1/2, Capillus HIV-1/2 and Serocard HIV. Samples were obtained from participants in a cohort study on HIV-infection (72%), from tuberculosis patients (18%) and from participants in surveillance studies among police recruits and commercial sex workers (10%). The panel consisted of 249 HIV-1 positive samples, of which 68 was HIV-1 subtype C and 1 HIV-1 subtype A, and 439 HIV-1 negative samples. Determine and Capillus were 100% sensitive and 99.8% specific, Serocard was 100% sensitive and specific. On retrospective evaluation, both parallel (samples tested simultaneously by two rapid assays) and serial (samples tested by two consecutive rapid assays) testing algorithms were 100% sensitive and specific when compared to ELISA/WB or double ELISA testing strategy. In conclusion rapid assays have high sensitivity and specificity. HIV serodiagnosis based on rapid assays may therefore be a valuable alternative in voluntary counseling and testing centers and in facilities where sophisticated laboratories are not available.


http://cvl.asm.org/content/9/1/160.long

Abstract
The Western blot (WB) assay is the most widely accepted confirmatory assay for the detection of antibodies to human immunodeficiency virus type 1 (HIV-1). However, indeterminate WB reactivity to HIV-1 proteins may occur in individuals
who do not appear to be infected with HIV. The profiles of WB reactivity among Ethiopians are hardly known. Here, we describe the profiles of indeterminate WB reactivity in Ethiopians with discordant screening assays. Between 1996 and 2000, a total of 12,124 specimens were tested for HIV-1 antibodies. Overall, 1,437 (11.9%) were positive for HIV-1 antibody. Ninety-one (approximately 0.8%) gave equivocal results because of discordant results among the various screening assays and indeterminate WB profiles by the American Red Cross (ARC) criteria. Most (30.4%) of these indeterminate WB results were due to p24 reactivity. However, 12 samples (13.2%) displayed reactivity to p24 and gp41 or to p24 and gp120/160 proteins (positive by Centers for Disease Control and Prevention [CDC] criteria). Only two samples (2.2%) were reactive to both env glycoprotein’s gp41 and gp120/160 (positive by the World Health Organization [WHO] criteria). Of 31 WB assays initially indeterminate by the ARC criteria and with follow-up samples, 29 (93.5%) became negative when retested subsequently while 2 (6.5%) remained indeterminate for more than a year and were thus considered negative. Using CDC and WHO criteria, 6 (19.4%) and 2 (6.5%), respectively, of these WB assays would have been considered falsely positive. In addition, 17 indeterminate samples were negative when assessed by a nucleic acid-based amplification assay for HIV-1 viremia. In general, there was 97.8% concordance between the ARC and WHO criteria and 85.7% concordance between the ARC and CDC criteria for an indeterminate WB result. The ARC criteria best met the specified objectives for diagnosis in our setting.


Abstract

The antibacterial activity of polar and non-polar extracts prepared from the roots of Plumbago zeylanica L. (Plumbaginaceae), a plant widely used in Ethiopian traditional medicine for various ailments were investigated using hole plate diffusion method against some pneumonia causing pathogens. The aqueous extract did not exhibit any activity while petroleum ether extract was found to have strong anti-bacterial effects as compared to the ethanol extract which showed a significant activity. Activity guided chromatographic purification of the petroleum ether extract led to the isolation of three compounds, of which the compound identified as 5-hydroxy-2-methyl-1, 4-naphthoquinone, plumbagin, found to be the active component on the tested microorganisms. Minimum inhibitory concentration value of this particular compound showed comparative activity resembling the commonly used broad spectrum antibiotic, tetracycline. The strong antibacterial effect of the petroleum ether extract is discussed to show that it was attributable to this compound rather than the other two that were found to have trace of activities.

Key words: anti-bacterial activity, minimum inhibitory concentration, plumbago zeylanica, pneumonia.

Abstract

**Background:** Ergotism is caused by the fungus Claviceps purpurea, which parasitizes cereal grains and is ingested by man through flour milled from contaminated cereals. An outbreak of ergotism in Ethiopia in 1978 resulted from exposure to ergot alkaloids from C. purpurea sclerotia.

**Objectives:** The objective of this study was to investigate consumption of cereal grains grown locally as the most likely cause of the outbreak of gangrenous ergotism so that control measures could be applied.

**Methods:** During June to August, 2001, there were reports of a large number of cases of gangrene in Arsi Zone, Ethiopia. A multi-disciplinary team assessed the outbreak of the decease. Non-structured in-depth interviews were conducted with heads of households of the affected, and each of the patients was also interviewed. Grain samples were then collected from the interviewed households and analyzed for ergot alkaloids. Acute toxicity studies were also conducted by feeding male, non-pregnant and pregnant Swiss albino mice with the collected grain samples.

**Results:** Mycological cultures of grain samples yielded ergot alkaloids. All the grain samples contained ergot alkaloids, but with varying concentration. The highest concentration of ergotamine was observed in grain samples No. 4 (2.51 mg/100 g) and No. 6 (2.66 mg/100 g). Grain samples No. 2 and 7 had similar concentration of ergotamine, but more than four-fold higher than in grain sample No. 3. In contrast, the concentration of ergometrine in grain samples No. 4 (1.15mg/100 g) and No.6 (1.21mg/100 g) were two-fold lower than ergotamine. The highest death (55%) of mice was observed in those test groups fed on grain samples No. 4 and No. 6. Cases of abortion were noted after 3 days of feeding in all pregnant mice with the exception of those allocated to grain sample No. 3.

**Conclusion:** We conclude on the basis of these results that the outbreak of gangrene in Arsi Zone, Ethiopia, is attributed to the ingestion of barley containing ergotized wild oats.


Abstract

Entomopathogenic fungi, *M. anisopliae* EE, *M. anisopliae* MM, *B. bassiana* FF, *B. bassiana* GG, and *B. bassiana* AK isolated from different sources in Ethiopia were evaluated against the tsetse fly, *Glossina moritans morsitans* in the laboratory. *M. anisopliae* isolates EE and MM caused mortalities of 96.67% and 73.33%, respectively while *B. bassiana* isolates codes as FF, GG, and AK showed percent mortalities of 75.00%, 63.33% and 53.33%, respectively. *B. bassiana* FF was significantly better than *B. bassiana* AK (p<0.05). Spore production of presumably promising isolates, *M. anisopliae* MM and EE, was determined on solid substrates, whole grains of rice, wheat, barley and sorghum. Both isolates
grew best on rice giving a yield of 1.42 x 10^9 spores/gram of rice for M. *anisopliae* MM and 1.62 x 10^9 spore/gram of rice for M. *anisopliae* EE. No relationship was observed between moisture content of grain types and spore yield (p>0.05). The potential of the isolates for the control of tsetse flies is discussed.

http://sti.bmj.com/content/78/2/123.long

Abstract

**BACKGROUND:** The prevalence and incidence of syphilis infection were examined in a cohort study of factory workers in Ethiopia.

**METHOD:** Between February 1997 and March 1999, 409 men and 348 women were enrolled and followed in the cohort study.

**RESULTS:** The prevalence (95% CI) of past/current syphilis (positive TPPA serology) was 28.9% (25.7% to 32.3%), and factors associated with past/current syphilis were markers of risky sexual behaviors including HIV infection. In this cohort of factory workers subject to public information/education meetings, testing for HIV antibodies, and individual counseling, the incidence (97.5% one sided CI) of new syphilis infections was 0/691 = 0 (0 to 0.5) per 100 person years.

**CONCLUSION:** This study has documented a reduction in risky sexual behaviors and a low syphilis incidence among factory workers participating in a cohort study on HIV infection progression in Addis Ababa.


Abstract

Between 1997 and 2001, 1624 Ethiopian factory workers were enrolled in prospective HIV-1 cohorts in Ethiopia, at Akaki and Wonji towns. HIV-1 seroprevalence fat intake was 11.8% (Akaki) and 7.1% (Wonji). HIV-1 incidence was .75 per 100 person-years (Akaki) and .35 per 100 person-years (Wonji). During follow up, CD4 T-cell counts remained significantly lower and CD8 T-cell counts significantly higher in Ethiopian sero converters compared with Dutch sero converters. Viral loads were lower in Ethiopian sero converters versus Dutch sero converters in the first months after sero conversion, subsequently increasing to similar levels. All 20 Ethiopian sero converters were infected with HIV-1 subtype C (15 with sub-cluster C' and 5 with sub-cluster C). Viral loads were higher in sub-cluster C'-infected Ethiopian sero converters. One subject demonstrated a window period of at least 204 days, combined with a high pressure conversion viral load and no decline of CD4 T cells over a follow-up period of at least 3 years.
Abstract
Serum samples (n = 4,593) collected in 1994 as part of a representative household community survey of the population of Addis Ababa who were 0-49 years old were tested for hepatitis C (HCV) antibodies. A third generation ELISA was used for primary screening and a line immunoblot assay for confirmation. HCV antibody prevalence was 0.9% (95% CI, 0.6-1.2%) and higher among HIV-positive compared to HIV-negative individuals (4.5% vs. 0.8%, respectively, P < 0.001). Similar higher prevalence of HCV antibodies was seen among HIV-positive compared to HIV-negative antenatal care attenders (2.9% vs. 0.8%, respectively, P = 0.003, n = 1,725), and sex workers (5.3% vs. 1.3%, respectively, P = 0.02, n = 383). Such association between HCV and HIV infection has not been described previously in Africa. After stratification by HIV status, HCV prevalence among women of the general population was identical to that of sex workers, suggesting that HCV sexual transmission is not common in this population and that HIV infection does not enhance susceptibility to HCV sexual transmission.

Abstract
BACKGROUND: Although several surveys investigating the epidemiology of herpes simplex virus type 2 (HSV-2) infection using type-specific immunologic assays have been carried out in Africa, none has examined the risk factors for HSV-2 infection in a representative sample from an urban adult population.
GOALS: To estimate the prevalence of HSV-2 infection in the adult population of Addis Ababa, Ethiopia and to identify risk factors for HSV-2 infection.
STUDY DESIGN: Two cross-sectional surveys, one community-based (June to September 1996, n = 506) and one factory-based (February to November 1997, n = 657), were conducted. Samples were tested for HSV-2 immunoglobulin G antibodies using type-specific enzyme-linked immunoassays (ELISA).
RESULTS: In the community-based survey, HSV-2 prevalence increased with age until 25 years, then leveled off at 50% in both genders. The same independent predictors of HSV-2 infection were identified in both genders: older age, higher lifetime number of sexual partners, positive HIV serology, and positive Treponema pallidum hemagglutination serology.
CONCLUSIONS: This study confirmed the high prevalence of HSV-2 infection among adults in an African urban population and its association with HIV
infection. Prevention of HSV-2 and other sexually transmitted infections through partner reduction and condom use should be encouraged.


Abstract
The study estimated the potential demographic impact of acquired immunodeficiency syndrome (AIDS) in a low-fertility urban setting in sub-Saharan Africa. The prevalence of human immunodeficiency virus (HIV) projected using a deterministic mathematical model was put into the AIDS Impact Model (AIM) of the SPECTRUM Policy Modeling System to estimate the potential demographic impact of AIDS in Addis Ababa, Ethiopia. Demographic indicators from 1984 (the start of the HIV epidemic in Ethiopia) to 2024, including and excluding the HIV epidemic, were compared. Addis Ababa is experiencing a demographic transition in which the total fertility rate has declined from 3.8 to below replacement level over the last 20 years. The prevalence of HIV is predicted to stabilize at 10% in adults, resulting in a total number of people living with HIV at 200,000 and a cumulative number of deaths due to AIDS at 50,000. About 60% of adult deaths can be attributable to AIDS by 2000. The epidemic is predicted to reduce life expectancy by 10 and 17 years in 2000 and 2024 respectively, and to turn to negative, the rate of natural increase after 2009. Accordingly, the rate of natural increase will be -0.18%, -0.35%, and -0.71% per annum by 2009, 2014, and 2024 respectively. Population growth is expected to continue with or without HIV, as a result of high net in-migration, although data for migration are scanty. In a low-fertility urban society of Africa, this study shows the potential for the HIV/AIDS epidemic to turn the rate of natural increase to negative.

Key words: HIV, Acquired immunodeficiency sundren, Mortality, Population growth, Fertility, Life expectancy, Ethiopia.


Abstract
Objective: To investigate vitamin A status of pre-school and school-aged children in the study area.

Design: Cross-sectional.

Setting: Arssi, Ethiopia.

Subjects: Four hundred and two children.

Results: Night blindness, Bitots spot, corneal xerosis, corneal ulceration and corneal scar were observed in 7.2%, 2.2%, 0.2%, 0.5%, and 0.5% of the children respectively. The prevalence of xerophthalmia was higher in school-aged children than pre-school children (p<0.0001). Based on the WHO recommended cut-off
level, serum retinol levels were in the “low” range (<20µl/dl) in 51% of the children.

**Conclusion:** The results indicate that vitamin A deficiency (VAD) is a public health problem in Arssi, with higher prevalence among school-aged children that pre-school children.

2003


**Abstract**

Malaria is a major public health problem and of considerable socio-economic burden in most parts of Ethiopia. The country has witnessed recurrent epidemics of the disease, resulting in grave consequences including in areas designated as highland fringe. A study was undertaken to grossly assess the magnitude of the problems, the effectiveness of the control options and to explore the challenges encountered and the experiences gained during the 1998 malaria epidemic in Akaki Town and its environs. Health facility clinical records of individual patients and weekly surveillance and epidemic control reports were utilized as principal sources of data. The information revealed that the epidemic was very alarming affecting a sizable part of Akaki and the surrounding areas, with the total number of cases amounting to 622. The epidemic was controlled by case detection and treatment as well as by intensive vector control activities. The control endeavor, however, posed great difficulties due to the absence of systematic malaria control program, owing to underestimation of the threat from highland malaria. The contribution from the adjacent Oromia Malaria Control Program and The Federal Ministry of Health to control the epidemic (mainly vector control) was reckoned to be substantial. Thus, capacity building targeted to early detection, prevention and control of malaria epidemics and preparedness is deemed to be of paramount importance. A viable Integrated Disease Surveillance and Response at health facilities could ensure early containment of the otherwise devastating epidemics.


**Abstract**

A community-based sero epidemiological survey of Addis Ababa, Ethiopia was conducted in 1994 to inform on the transmission dynamics and control of hepatitis B virus (HBV) infection. Venous blood from 4736 individuals under 50 years of age from 1262 households, selected using stratified cluster-sampling, was screened for HBV markers using commercial ELISAs. HBsAg prevalence was 7% (95% CI 6-8), higher in males (9%; 7-10) than females (5%; 4-6). HbeAg prevalence in HBsAg positive was 23% (18-29), and less than 1% of women of childbearing age were HBeAg positive. Overall HBV stero-prevalence (any marker), rose steadily with age to over 70% in 40-49 years old, indicating significant childhood and adult transmission. Estimated instantaneous incidence
was 3-4/100 susceptible/year, higher in males than in females in 0-4 years old, and peaking in early childhood and young adults.

The age at which 50% had evidence of infection was around 20 years. And the herd immunity threshold is approximated at 63-77%. Addis Ababa is of intermediate-high HBV endemcity, with negligible prenatal transmission. Our main findings are the identification of a significant difference between males and females in the age-acquisition of HBV infection, and marked difference between age groups in HBV incidence rates. These results should target future research studies of underlying risk factors. Furthermore, we generate a crude estimate of the level of coverage of HBV vaccine that would be required to eliminate the virus from study population.


Abstract
This study investigated barriers that may pose a threat to a successful implementation of an antiretroviral treatment (ART) program in Ethiopia. As prelude to the provision of ART among factory workers participating in a cohort study on HIV and AIDS in Ethiopia, we measured knowledge and attitudes towards several aspects of ART and provided several an educational interventions. The proportion of participants having good knowledge on issues concerning adherence was found reasonably well (67.7%), concerning the benefit of ART was intermediate (37.7%) and concerning eligibility was very low (16.8%). Knowledge concerning eligibility improved somewhat after the provision of the educational intervention. Only one third of HIV infected person’s disclosures their HIV status to their partner. Several aspect that could impact adherence to ART will be discussed, such as ART, and disclosure of sero status, taking the cohort study site into account. Results indicate a tremendous need to educate cohort participants before and during introduction of ART. Efforts to increase knowledge of ART and especially knowledge of eligibility criteria to start ART, seem warranted, as well as these factors directly impact the success of an ART program.


Abstract
To confirm the high reported incidence of intestinal amoebas is among participants at two cohort sites in Ethiopia where an HIV/ADIS study is taking place, stool samples of 232 patients with complaints of diarrhea were examined for the presence of Entamoeba histolytica and E.dispar DNA between April and December 2001. By microscopy, 91 (39%) of the study participants were reported to harbor Entamoeba trophozoites and/or four-nucleated cysts. Using specific
E. histolytica and E. dispar DNA amplification and detection, none of the study participants were found to be infected with E. histolytica and only 21 (9%) with E. dispar. the consequences of the over diagnosis of E. histolytica and briefly discussed.

**Key words:** Amoebasis, Entamoeba histolytic, Entamoeba despair, diagnosis, polymerase chain reaction, Ethiopia.


**Abstract**

**Background:** There are many traditionally used analgesic plants in Ethiopia. They, however, have not been subject to scientific investigation for their efficiency and safety.

**Objective:** to evaluate both prophylactic and reliving effects of aqueous and ethanol extracts of four traditionally use medicinal plants in Ethiopia.

**Design:** An experimental design in which five groups of albino mice weighting 30-35 grams representing positive and negative control, and extract treated groups respectively. The extracts, standard drugs and normal saline were administrated into GIT by gavages to evaluate the analgesic effect.

**Setting:** Department of Drug Research at Ethiopia Health and Nutrition Research Institute and Department of Pharmacology at Faculty of Medicine, Addis Ababa University.

**Methods:** Analgesic effects of water and ethanol extracts of four plants were evaluated against distilled water and standard analgesics (morphine and acetylsalicylic acid) with acetic acid induced writhing tests in mice. The four plants used for this screening were ocimum sauve, ocimu lamiifolium, and lippie adoensis and ajuga remota.

**Results:** All extracts of the four plant materials were observed to possess both inhibiting and treatment activities against acetic acid induced pain. Dose related analgesic effect was also observed with all extracts of all plants with different potencies. Ethanol extracts of all the four plant materials were more potent than their water extracts at all dose levels except O. Sauve, and L. adoensis whose water extracts seem to be a bit more potent at low dose. The analgesic potencies of both extracts of all the four plants were shown to be less than those of the standards analgesics. Of all the extracts, the ethanol extract of O. Lmiifolium was found to be the most potent, while its water extract was the least. Acetic acid induced writing was relieved with medium dose of both extracts in most cases and with low dose in few. Hundred percent reliefs were achieved with both standard analgesics at a very low dose.

**Conclusion:** the present study show that all the extracts of all the plant materials have got both inhibiting and reliving effects of pain.

266. **Aster Tsegaye, Dawit Wolday, Sigrid Otto, Beyene Petros, Tsehai Assefa, Tsegaye Alebachew, Ermias Hailu, Fekadu Adugna, Worku Measho, Wendeline Dorigo-Zetsma, Arnaud L. Fontanet, Debbie van Baarle, and Frank Miedema**
Abstract

To obtain more insight into blood lymphocyte subpopulations of Ethiopians, we studied the immunologic profile of children and neonates and compared these data with those obtained from adults. Peripheral blood mononuclear cells (PMBCs) and cord blood mononuclear cells (CBMCs) were collected from 137 HIV-1 uninfected subjects aged 0 (cord blood) up to 40 years. Lymphocyte subsets (T, B, and NK cells, CD4+ and CD8+ T cells) were determined and T cell activation (CD38 and HLADR) and differentiation (CD45RO and CD27) markers were measured on CD4+ and CD8+ T cells. The absolute number and percentage values of most lymphocyte subpopulations differed substantially with age. Neonates and children were found to have significantly higher CD4+ T cell counts compared to adults. The median proportion significantly declined to 14.2% during adulthood. In addition, activation of both CD4+ and CD8+ T cells, as determined by the double expression of HLADR and CD38, was observed in children under the age of 16 and adults, but not in neonates. A more differentiated phenotype (CD27-) was observed in adults compared to children for both CD4+ and CD8+ T cells. The immune alternations including the remarkably low CD4 count with highly depleted naïve phenotype and persistently activated immune system seen in adult Ethiopians are not apparent at birth, but rather develop over time.


Abstract

From 1995 to 2001, five rounds of sentinel surveillance were carried out for young women attending antenatal care clinics at four health centers in Addis Ababa, the capital city of Ethiopia, to monitor trends in the prevalence of HIV (enzyme-linked immunosorbent assay and western blotting) and antibodies to Treponema pallidum (T. Pallidum hemagglutination assay and rapid plasma regain test). Prevalence ratios for an increase in one calendar year were estimated using log-binomial models. Between 1995 and 2001, the prevalence of HIV infection among young women (age range 15-24 years) attending antenatal care clinics in inner city health centers declined from 24.2% to 15.1% (prevalence ratio for an increase in one calendar year, 0.91; 95% confidence interval, 0.87-0.95). No change was observed for older age groups or in outer city health centers. The decline in the prevalence of active syphilis (T. pallidum hem agglutination assay and rapid plasma regain testing positive for antibodies to T. pallidum) was more pronounced among and also restricted to the young age groups (age range, 15-
24 years) in the inner city (from 7.6% in 1995 to 1.3% in 2001; prevalence ratio, 0.69; 95% confidence interval, 0.59-0.80). The declining trends in the prevalence of HIV infection and syphilis among young women attending antenatal care clinics in the inner city are encouraging, but these findings require conformation in future years and for other population groups.


Abstract

Intestinal parasitic infections have been suggested to cause persistent immune activation leading to an unbalanced immune state. Such a state has been proposed to be a major factor in the pathogenesis of AIDS in an African context. The present study investigated the effect of incidental parasitic infection and treatment on the profile of T cell differentiation and activation makers on CD4+ and CD8+ T cells from HIV-1 infected and uninfected adult Ethiopians. Cryopreserved PBMCs from 64 subjects (41 HIV-negative and 23 HIV-positive) with follow-up visits at 6-monthly intervals were used to compare the effect of incidental intestinal parasites and their treatment upon T cell subset profiles and activation status. The samples were stained with antibodies to various T cell differentiation and activation markers allowing naïve, memory, and effector, memory/effector, activated and resting CD4+ T and CD8+ T cell subsets to be quantified by triple-labeling FACScan. Incidental intestinal parasitic infectious resulted in a significant increase in memory CD4+ T cell numbers both in HIV-negative and HIV-positive subjects L(p<0.05) in HIV-positive subjects co-infected with parasites. In HIV-negative subjects, a significant decline in activated cells and a significant increase in resting CD8+ T cells (p<0.05) was observed after treatment for parasites. These data suggest that intestinal parasitic infections could result in the alteration of T cell subset counts and also in the up-regulation of T cell activation markers in peripheral blood. Treatment of parasitic infections showed a tendency to reduce the activation suggesting that, together with other community based intervention strategies, such treatment could be used to down-regulate immune activation and hence protect the host from being easily attached by HIV.

Key words: Ethiopia, Immune activation, Intestinal parasites, T-cell subsets.


Abstract

Ethiopia is divided administratively into 11 regional states, 71 zones, and 528 weredas (equivalent to districts). There are 91 hospitals, 257 health centers, 1,108 health posts, and 2992 health stations.

Regional states have different national immunization days (NISs), and routine oral poliovirus vaccine (OPV) coverage varies among regions due to differences in the
health infrastructures among regions. Regions on the periphery of the country that need special attention are Somali, Afar, Gambella and Benishangul. According to an estimate by the Ministry of Health of Ethiopia, approximately 50% of the Ethiopian population has no access to health services mainly due to their geographical location.

Polio eradication is an international project launched by the World Health Organization. Ethiopia conducted the first sub-NIDs (sNIDs) in 1996, followed by two rounds of NIDs every year thereafter. House-to-house immunization started in 1999, and contributed to increase immunization rates. In parallel, surveillance of acute flaccid paralysis (AFP) and laboratory diagnosis of stool specimens of AFP cases were conducted. This paper reports the laboratory results obtained in 2000-2002 with special reference to different regions of Ethiopia.


Abstract

This cross-sectional study was designed to determine and describe the prevalence of diarrhea caused by Yersinia enterocolitica isolates in comparison with the commonly encountered diarrhoeagenic salmonella and shigella among all age group outpatients of Addis Ababa, Ethiopia. Standardized bacteriological isolation and biochemical test techniques were used. Among the stool samples of 205 patients tested for bacteriological cultures, only 3 (1.5%) were positive for Yersinia enterocolitica, 22 (10.7%) for salmonella and 12 (5.8%) for shigella. In this study, Yersinia enterocolitica did not seem to be the main etiologic enteric pathogenic agent when compared with the well-studied diarrhoeacogenic bacteria agents like salmonella and shigella strains.


Abstract

Objective: to investigate nutrient composition in Moringa leaves and compare with those of kale (Brassica carinata) and Swiss chard (Beta vulgaris).

Design: Laboratory based study, nutrient composition of fresh and cooked leaves of M.stenopetala were analyzed.

Setting: Gama-Gofa, South-western Ethiopia.

Results: Raw M.stenopetala leaves contain 9% dry matter as crude protein, about 3-fold lower than in kale and Swiss chard. M.stenopetala leaves contain higher percentage of carbohydrate, crude fiber and calcium compared to both raw and cooked kale and Swiss chard. Vitamins are present at nutritionally significant levels averaging 28mg/100g of vitamin C and 160 µg/100g of β-carotene. Minerals such as potassium, iron, zinc, phosphorous and calcium also exist in significant concentrations with the average values of 3.08 mg/ 100g iron and 792.8 mg/ 100 g calcium.
**Conclusion:** Although the nutrient composition of *M. stenopetala* leaves in most cases is lower compared to kale and Swiss chard, they can be a good source of nutrients in dry seasons potentially when other vegetables are scarce. However, the presence of small amounts of cyanogenic glycosides in *M. stenopetala* leaves may have a health risk in areas of high incidence of endemic goiter as an exacerbating factor if consumed more for a long period of time.


**Abstract**

Infectious diseases are a significant cause of morbidity and mortality among HIV-infected persons in Ethiopia. Though no systematic studies have been performed, anecdotal reports are available mostly from cross-sectional studies on the associations between the most prevalent infectious diseases and HIV/AIDS. In this review, we present the most frequently reported infectious diseases among people living with HIV/AIDS in the country, with the need for strengthening diagnostic laboratories being urgent in order to support surveillance as well as control measures.


**Abstract**

**Setting:** prospective cohort study, Ethiopia.

**Objective:** to study changes in biological markers of HIV infection progression before and after development of TB diseases.

**Design:** a longitudinal study of 804 adult factory workers (95 HIV-positive, 789 HIV-negative), who were followed every 6 months of 3.8 years.

**Results:** overall, the incidence rate of TB was 10/222=45.1 (95% CI 24.3-, -83.9) per 1000 PYO among HIV-1 negative participants (incidence rate ratio 6.62, 95% CI 2.94-14.9). Among the 10 HIV-positive participants who subsequently developed TB disease, the CD4 count was low (median 20/µl, range 45-419), and viral load high (median 4.97 log copies. /ml, range 3.70-5.58), at the routine follow-up visit prior to TB diagnosis. Following TB treatment, plasma viral load remained persistently elevated despite clinical resolution of TB disease, and seven of the 10 patients died within a median time of 8 months.

**Conclusion:** in this cohort, HIV-infected Ethiopians who developed TB disease already had low CD4 counts and high viral load prior to the diagnosis of TB viral load did not decrease following TB treatment, leading to a poor overall prognosis in these patients.

Abstracts

In 1992, HIV/AIDS researchers in Amsterdam, the Netherlands, were invited to work in partnership with researchers in Ethiopia to build an HIV/AIDS research infrastructure in Addis Ababa. This project, which began in 1994, was envisioned to contribute meaningfully to frightening the HIV pandemic in the decades to come. Its immediate objective was to establish an HIV research laboratory to serve international partnerships pursuing HIV vaccine research in Ethiopia and to support national health authorities fighting the HIV epidemic in Ethiopia. The overall goal was to develop research capacity at the Ethiopian Health and Nutrition Research Institute (EHNRI) by improving facilities, training technical and academic personnel (at PhD, MSc, and MPH level), establishing cohort studies to study HIV infection progression, and helping the government to implement a national HIV surveillance program.

In the period 1994-2002, the projected HIV/AIDS research laboratory was built and several existing sections of EHNRI were renovated and upgraded. An active HIV-research program was established. Staff grew to more than 60, including three Ethiopian and three expatriate researcher/managers. Two PhD students have graduated in immunology and virology (University of Amsterdam, 2000), and five are currently in training. Several technical persons were trained and over 19 MSc/MPH-programs were supported at Addis Ababa University (AAU). The first Ethiopian PhD graduate becomes the National Program Manager for ENARP. Two ENARP cohort studies and several HIV-prevalence studies have helped to document the severity of the HIV epidemic in Ethiopia, assisting national authorities in formulation of national and regional policies to prevent HIV transmission. Initial funding for ENARP from the Netherlands government was projected for eight years, to end by 2003. It was expected that management responsibilities would then be transferred from expatriate to Ethiopian staff and all ENARP activities integrated into EHNRI.


Abstract

Objective: to measure the impact of HIV on mortality in Addis Ababa, Ethiopia.
Methods: the age, sex, and date of burial were recorded; in the absence of denominators, we compared to the ratio of deaths of persons 25-49 versus 5-14 year of age per calendar year, using logistic regression, adjusting for sex and site, the age and sex-specific mortality were calculated and compared with pre-HIV mortality in 1984.
Results: of 17,519 deaths, retrospectively reviewed, complete data were available for 6342(47%) females and 7269 (53%) males. During 1987-2001, the ’25-49’ verses ‘5-14’ group all cause mortality ratio increased by 8.5% per calendar year
A total of 5101 deaths were recorded in the prospective surveillance. Crude mortality rates were 9.5/1000 per year (men) and 7.1/1000 per year (women). In comparison with 1984, 5.0-times as many men and 5.3-times as many women died in the age group 35-39 years. Attributing the increase in mortality in ages 15-60 to HIV in the period 1984-2001, Ethiopian men and women have a probability of 18.8 and 17.8%, respectively, of dying of HIV before age 60.

**Conclusion:** Burials increased significantly among the '25-49', versus the '5-14' group, during the period 1987-2002. This trend, and a five-time higher mortality in 2001 than in 1984 in those aged 35-39 years demonstrate a severe impact of HIV on mortality. Continuing surveillance of burials is recommended.

---


**Abstract**

**OBJECTIVE:** To measure the impact of HIV on mortality in Addis Ababa, Ethiopia.

**DESIGN:** A retrospective review of burials at three cemeteries, 1987-2001 and a prospective surveillance of burials at all (n = 70) cemeteries, February-May, 2001.

**METHODS:** The age, sex, and date of burial were recorded; in the absence of denominators, we compared the ratio of deaths of persons 25-49 versus 5-14 years of age per calendar year, using logistic regression, adjusting for sex and site. The age- and sex- specific mortality were calculated and compared with pre-HIV mortality in 1984.

**RESULTS:** Of 17,519 deaths, retrospectively reviewed, complete data were available for 6342 (47%) females and 7269 (53%) males. During 1987-2001, the '25-49' versus '5-14' group all-cause mortality ratio increased by 8.5% per calendar year (P < 0.05). A total of 5101 deaths were recorded in the prospective surveillance. Crude mortality rates were 9.5/1000 per year (men) and 7.1/1000 per year (women). In comparison with 1984, 5.0-times as many men and 5.3-times as many women died in the age group 35-39 years. Attributing the increase in mortality in ages 15-60 to HIV in the period 1984-2001, Ethiopian men and women have a probability of 18.8 and 17.8%, respectively, of dying of HIV before age 60.

**CONCLUSION:** Burials increased significantly among the '25-49', versus the '5-14' group, during the period 1987-2001. This trend, and a five-time higher mortality in 2001 than in 1984 in those aged 35-39 years demonstrate a severe impact of HIV on mortality. Continuing surveillance of burials is recommended.

---


**Abstract**
Numerous plants species are used to treat ailments associated with pyresia in the indigenous health care delivery system of Ethiopia. Notable among these are ocimum suave and ocimum lamiifolium. The objective of the present study was thus to evaluate the antipyretic effects of the aqueous and ethanol extracts of the leaves of ocimum suave and ocimum lamiifolium in mice. Rectal temperatures were recorded before and after inducing pyrexia as well as after administration of the respective extracts every half an hour for 3h. Parallel experiments were run with a standard antipyretic (acetylsalicylic acid) and the vehicle (distilled water). All the plant extracts showed antipyretic property with reasonable onset and duration of action. Both ethanol and aqueous extracts of ocimum lamiifolium were more potent than their other counterpart extracts. Time dependent antipyretic effect was also observed with some extracts; reduced with time with aqueous extract of ocimum suave and increased with time with both extracts of ocimum lamiifolium.

**Key words:** Ocimum suave, Ocimum lamiifolium, Extracts Mice, Yeast, Rectal temperature, Antipyretic properties


**Abstract**

Many people use analgesic plants to relive pain and inflammation though most of them have not yet been proved to possess such properties. The objective of the present study was to screen the aqueous and ethanol extracts of four Ethiopian traditionally used medicinal plants for analgesic properties. Aqueous and ethanol extracts of the plant materials were screened for their analgesic properties in mice using tail-flick, hot-plate and tail-pinch tests at three dose levels. Normal saline and standard analgesics were employed as negative and positive controls, respectively. The plants subject for the present screening were ocimum suave, ocimum lamiifolium, lippie adoensis, and ajuga remota. All extracts were observed to possess analgesic properties with varying potencies in tail-flick and hot-plate tests. Analgesic activity however was not observed with tail-pinch test. The analgesic potencies also varied with concentrations and time after administration from the present findings, it can be concluded that the extracts of all the plant materials have got analgesic properties with fast onset of action whose mechanisms need to be investigated further.

**Key words:** Ocimum suave, Ocimum lamiifolium, Ajuga remota, Lippia adoensis, Extracts, Analgesic properties, Tail-flick, Hot-plate, Tail-pinch, Mice.


**Abstract**

We undertook a representative survey of measles antibodies in Addis Ababa, Ethiopia 1994, to characterize immunity and transmission. Specific-antibody
levels (IU/l) were determined by ELISA for 4654 sera from individuals aged 0-49 years (1805 < 15 years) collected by stratified household-cluster sampling. The proportion sero negative (< 100 IU/l) was 20% (95% CI: 16-25) in children 9-59 months old, declining to 9% (7-12) in 5-9 year olds, 5% (4-7) in 10-14 year olds, and < 1% in adults. The proportion of children (< 15 years old) with low-level antibody (100-255 IU/l) was 8% (7-10). Vaccination and an absence of a history of measles illness were strongly associated with low-level antibody. History of measles vaccination in 9 months to 14-year-old children was approximately 80%. We estimate a primary vaccine failure rate of 21% (12-34) and continued high measles incidence of 22 per 100 susceptible (19-24) per annum. Our data support the introduction of campaign vaccination in the city in 1998, although higher routine vaccine coverage is required to sustain the impact. The implications of a high prevalence of low-level antibody are discussed.


Abstracts

The magnitude and complexity of the HIV-1 genetic diversity are major challenges for vaccine development. Investigating of the genotype circulating in areas of high incidence, as well as their interactions, will be a milestone in the development of an efficacious vaccine. Because HIV-1 subtype C (HIV-1C) is responsible for most of the 36 million infections worldwide we investigated the HIV-1C strains circulating in Ethiopia in a retrospective, cross-sectional study. Serum samples from HIV-1 positive individuals were collected in seven Ethiopian cities and towns. Nucleotide sequences of the gag, pol, and env genes were analyzed. We performed phylogenetic analysis by the neighbor-joining and maximum likelihood methods with sequences from 30 isolates. And we determined recombination by the boot scanning method as implemented in the SIMPLOT program. Sequence analysis of a 2600- nucleotide fragment (including the gag gene, the protease, and the 5’half of reverse transcriptase of the pol gene) and the corresponding V1V2/C2V3 envelope regions confirmed that two HIV-1C genotypes (C’ and C”’) are co circulating in Ethiopia, as shown previously by the analysis of the C2V3 envelope region. We have identified intra-subtype recombination between the two HIV-1C genotypes. C’ and C”’, with 6 of the 30 (20%) analyzed viruses in India and southern Africa. Furthermore, all the recombinant viruses shared the C’ V1V3 region of the envelope, suggesting that the prevalence of viruses with the C’ envelope is increasing compared to the C” envelope. The possibility that viruses with a C’ envelope have a biological advantage over the viruses with a C” envelope should be further investigated in biological and epidemiological studies.

Abstract
Taverniera abyssinica A. rich is an endemic and threatened medical plant species in Ethiopia. However, there is no any attempt to investigate the germination behavior of the seed for sustainable utilization and conservation of the specious. This investigation was therefore designed to study the factors affecting germination of the seeds. Effects of storage durations (2, 8, 14, or 20 months), storage conditions (room temperature of refrigeration), pod developmental staged (green, brownish-green of brown) and treatment methods: mechanical hot water under 30°C-90°C temperature regime, and acid (sulphuric, nitric and hydrochloric acids) on percentage germination of T. abyssinica seeds were investigated. The findings indicated that seeds from brownish-green and brown pods germinated successfully (98%-100%) and could be stored for at least 20 months in dry condition under 2°C-20°C without loss of viability. However, the seeds of T.abyssinica required pre-germination treatment. Mechanical or 98% sulphuric acid treatment for 10-40 minutes improved germination from 8% (control) to over 98%. Hot water (70°C) treatment for one hour also improved germination to 54%. Mechanical see scarification is the most promising approach to overcome seed coat dormancy provided that cheap, safe, efficient and easily applicable devices are developed.


Abstract
The present study was designed to quantitatively measure and compare the levels and variations of total protein, individual amino acids, and computed protein efficiency ratio (C-PER) in raw and traditionally processed products of one recently released quality protein maize (QPM BH542) with four high-yield maize hybrids, namely flint BH660, semi-dent BH140, Pioneer 30H83, and Pioneer 30G97, as well as one local maize cultivar. The total protein content was variable among the cultivars ranging from 7% for BH660 to 8.6% for Pioneer 30H83, 8.9% for BH140, 9.8% for QPM BH542, 10.1% for local maize cultivar, and 11.8% for Pioneer 30G97, respectively. However, the QPM BH542 maize protein proved to be higher in nutritional quality than common maize proteins because it contained 30% to 82% more lysine, higher levels of arginine, tryptophan, histidine, threonine, cysteine, and valine. As a result, the QPM BH542 amino acid profile gives a good balance of total essential amino acids, limited only in lysine, and has a C-PER ratio of 2.2 compared to 1.14, 1.2, 1.4, 1.66, and 1.67 for Pioneer 30G97, local, BH-140, BH660, and Pioneer 30H83, respectively. The various traditional processes of maize have no significant effect on the protein nutritional quality of the new quality protein maize. Hence, the widely dissemination of it in agricultural cultivation as well as consumption by the general population is recommended.
**Key words:** Amino acids, Calculated protein efficiency ratio, Digestibility, Quality protein maize


**Abstract:**

**Objective:** to demonstrate the effectiveness and social feasibility of weekly versus daily iron supplementation in preventing and treating iron deficiency anemia among anemic mothers.

**Design:** a longitudinal in nature.

**Setting:** seven urban slum communities in Teklehaimanot wereda, Addis Ababa, Ethiopia.

**Subjects:** two hundred seven eligible mothers were assigned to the daily supplementation, weekly supplementation or control groups following randomizations between March and May 2001. The daily supplemented groups (n=71) received 60mg of elemental iron containing 300mg ferrous sulphate and 400 mg folic acid from Monday to Friday. The weekly group (n=68) received one tablet once a week every Monday supervised while the control group (n=68) was advised to take no medications without the knowledge of the investigator until the completion of the study. To eliminate a major source of variation, subjects participating in the study were de wormed at the beginning of the study.

**Main outcome measures:** Hemoglobin and serum ferritin concentrations were compared before and after the intervention among the groups.

**Results:** the mean hemoglobin (Hgb), and serum ferritin concentration (SFC) at baseline were practically similar among the groups. Hemoglobin levels significantly increased at the end of the study in all groups and proportion of anemia decreased from 6.9% to 1.6% in the daily, 6.7% to 1.7% in the weekly supplemented and 6.7% to 6.1% in the control groups. The difference noted between the daily and the weekly supplemented groups was not significant. The improvement of SFC concentration was better in the daily than the weekly group but not statistically significant. Daily supplementation schedule caused more side effects and lower compliance level than the weekly supplementation schedule.

**Conclusion:** weekly supplementation is simple, comparable to daily supplementation and economically advantageous. Thus, it is recommended to adopt the strategy for controlling anemia. Further because of higher compliance rate and lower side effects, it is deemed to be socially feasible.


**Abstract**

**Objective:** To determine the impact of vitamin A supplementation on child morbidity and nutritional status.

**Design:** A community based follow-up (interventional) in nature.
Setting: Two randomly selected weredas (districts) of Tigray, North Ethiopia were studied between 1996 and 1997.

Subjects: Four thousand seven hundred and seventy children aged between six and 72 months, selected using a multi-stage sampling procedure were enrolled and clinically assessed for xerophthalimia and nutritional status. A sub-sample of these children (n=281) was further assessed for their serum retinol levels.

Main outcome measures: The pre and post intervention data of xerophthalmia, morbidity, and nutritional status and serum retinol levels were compared.

Results: Vitamin A capsule coverage of 87% in all the villages of the weredas and a statistically significant (p<0.05) reduction in the prevalence of Bitot’s spot (from 1.5 to 0.5), fever (from 29.8 to 14.2), diarrhea (from 10.2 to 3.0), stunned (from 64.2 to 42.7), wasted (from 12.8 to 2.5) and underweight (from 46.2 to 24.2). The proportion of children with normal serum retinol concentration (>0.7 µmole/L) has also improved significantly (from 36.8 to 56.2).

Conclusion: In conclusion, the significant improvement in morbidity and nutritional status that followed the intervention program although encouraging, it still indicates the importance of coupling periodic provision of vitamin A capsules with nutrition education.


Abstract

Background: Lathyrism, characterized by spastic par paresis, is a neurotoxin disorder caused by excessive consumption of grass pea (lathyrus sativus). Several myths about lathyrism are prevalent in Ethiopia. The aim of this study was to identify the level of awareness of this disease in the grass pea growing areas of Ethiopia and to identify barriers to the adoption of preventive methods.

Methods: cross-sectional survey using a standardized questionnaire on levels of awareness (KAP) of lathyrism, and its prevention methods was carried between February and May 1998 in 15 weredas of lathyrus growing areas of Ethiopia. The questionnaire contained general knowledge of lathyrism, its etiology, treatment, respondent’s perceived ability to prevent lathyrism and practices of specific lathyrism prevention behavior. The selected survey weredas were Gubalafto, Habro, Grado, Abasokuto, Asigido, Laylai Maichew, Dembia, Gonder Zuria, Bahirdar Zuria, Yilmana Densa, Girar Jarso, Ginbichy, Akaki, Woloncomi and Becho. The survey included a systematic sample of 450 housewives, survey interviews were conducted in the respondents’ homes.

Results: Of total of 450 questionnaires distributed, all 100% were correctly completed and analyzed. More than 60% of the housewives recognized the role of consuming grass pea alone for a long time as a factor of lathyrism and that the disease can be prevented. The proportion of housewives who believed that lathyrism was caused by evil spirits (12.2%); anger of God (14.2%); and germs (12.9%) are significantly lower (p<0.05) than those who believed that, walking in grass pea plantation (20.4%); sleeping on grass pea husk after harvest(24.0%) and walking over lathyrus soak or cook water (21.7%) as risk factor for
nurolathyrisim. Similarly, 131(29.1%) of the housewives mentioned that consuming grass pea with dairy products (milk butter or cheese) and meat can cause the disease. A total of 105(23.4%) of the population also responded that neurolathyrisim can be treated in a hospital or a health center. In contrast, 134 (29.8%), 40 (8.9%) and 64(14.2%), respectively, of housewives were uncertain whether or not neurolathyrisim is caused by over-consumption of grass pea alone, could be treated, or prevented.

Conclusion: Although the present can be very useful for planning or evaluation lathyrisim control activities a serious and consistent effort through public health activities is essential to educate villagers about lathyrisim, its cause, and prevention.

Key words: KAP, Lathyrus sativus, lathyrisim.


Abstract
A cross-sectional survey was carried out in Ginchi farming community, central Ethiopia during October and November 2001 to assess the level of association between children's nutritional status, families' socio-economic gradient, and degree of maternal attention and cognitive development. Ninety children were enrolled in the study, and assessment for cognitive performance was carried out using Bailey Infant Development Scale II. A pilot tested questionnaire was used to collect data on socio-economic status, mothers’ care behavior, sanitary conditions of households and feeding pattern, and anthropometry of children. Chronic malnutrition expressed as height for age < -2Z-score of standard was prevalent beginning from the second birthday. Poor cognitive performance was comparatively common in the age group where chronic malnutrition is proportionately prevalent. Logistic regression analysis for variables that demonstrated significant association in correlation study revealed height for age, household possession of consumable durables, maternal care time, type and frequency of feeding and birth order of the child to be significant determinants for cognitive performance of children. Findings implicate a need for comprehensive approach, which incorporates, programs in nutrition, environmental sanitation, family planning, and strategies to reduce maternal workload, to ensure adequate physical and mental development of children.


Abstract
The repellent activity of essential oils of lemon eucalyptus (Eucalyptus maculata citrodion), rue (Ruta chalepensis), oleoresin of pyrethrum (Chrysanthemum cineraria folium) and neem (Azadiracta indica) have been field tested as 40%, 50% and 75% solutions in coconut oil against populations of mosquitoes consisting mainly of Mansonia in Gambella, western Ethiopia. A latin square
design was used to randomize the test subjects for possible individual differences for mosquito attraction. Repellency was evaluated as the percentage protection. Deet was included in the study for comparison. All the plant products manifested repellency. At 50% concentration at which the highest repellency was recorded the protection was 91.6%, 87.0%, 96.0%, 97.9% for rue, neem, pyrethrum and deet, respectively. The essential oil of lemon eucalyptus was not tried at this concentration. At a 40% concentration deet, lemon eucalyptus and pyrethrum were significantly (p < 0.05) more effective than rue and neem. At a 50% concentration, deet and pyrethrum were significantly better (p < 0.05) than rue and neem. At a 75% concentration, deet and lemon eucalyptus performed significantly better (p < 0.05) than pyrethrum and neem. The difference between pyrethrum and neem was also significant (p < 0.01).


Abstract
The contribution of various factors to malnutrition, particularly stunning, may differ among areas, and communities.
This cross sectional study aimed to estimate the level of stunning in breast-fed infants aged 5-11 mo. living in Dodota-Sire District, Ethiopia. Infants (n=305) and their mothers were examined physically, and anthropometric and demographic data were collected. The content of zinc, calcium and copper in breast milk was measured and data collected on the type, frequency of consumption, and time of introduction of supplementary feeding. Overall, 36% were stunned, 41% underweight and 13% wasted. The highest prevalence of malnutrition was seen in infants’ aged 9-11 mo. Among mothers, 27% has chronic energy deficiency (body mass index, < 18.5kg/m²) and 20% were night blind, indication that vitamin A deficiency was a serious problem. Infants fed > 3 times/d, consuming>600mL/d or consuming cow’s milk in addition to serials and/or legumes had markedly higher length-for-age Z-scores that their peers fed less frequently, consuming less food or not consuming cow’s milk[difference: 0.39,95% confidence interval(CI): 0.04-0.74; 0.17, 95% CI: 0.02-0.32; 0.40,95% CI: 0.07-0.72, respectively]. Infants of mothers will low concentrations of zinc in their breast milk were more stunned. In conclusion, the quality and quantity of foods consumed by infants is insufficient to prevent stunning. Thus it is necessary to increase the nutrient concentration of breast milk and of supplementary foods they consume, and by providing supplements to infants where appropriate.

Key words: anthropometry, breast-feeding, nutritional status, supplementary feeding, Ethiopia


Abstract
While the Ethiopian HIV-1 epidemic is dominated by subtype C, two distinguishable co-circuiting C genotypes have been identified based on sequences of the C2V3 envelope region. In this study, we sequenced and analyzed the long terminal repeat (LTR) sequence from 22 Ethiopian HIV-1-positive individuals. The two phylogenetically distinguishable genotypes C (n=13) and C' (n=4) are separated by significant bootstrap values. Nucleotide differences between the two groups were identified in the NF-AT, TCF-1α, and SP1 transcription factor binding sites, whereas the NF-KB and NRE-core sequences were identical between the two groups. Five isolates that could not be classified C or C’ were found to be recombinants within the LTR sequence upon boot scan analysis. Comparison of all the LTR sequences with their corresponding C2V3 envelope sequence revealed four inter-sub-types C/C’ recombinant isolates. Thus, the prevalence of C/C’ recombinant viruses is well over 40% interestingly, the C2V3 envelope sequences of all recombinant viruses belonged to the genotype C’, whereas every LTR sequence belonged to the genotype C. This result indicates that recombination between the two genotypes is unidirectional, possibly as the result of evolutionary pressure on the respective biological functions of the LTR promoter and the envelope protein.


Abstract

Rabies in Ethiopia is primarily a disease of dogs. It is also common among the human population because of the high rate of man to dog contact. There is, however, lack of information to determine the magnitude of rabies in man and other domestic animals in the country. In this paper, results of a retrospective study conducted at the zooness laboratory of the Ethiopian Health and Research Institute (EHNRI) during the last three years is reported. Among the different animal species examined for rabies during the period, the majority (96.14%) were dogs. A total of 793 brains of dogs were examined for rabies of which 75.79% were positive. On the other hand, 137 fatal human rabies were recorded and post exposure study, anti-rabies treatments were given to 7755 people. The present study, therefore, demonstrates the importance of rabies as a major public health problem in Addis Ababa. Dogs are responsible for the dissemination and maintenance of the disease in the city that indicates the need for the general public to be aware of the risks associated with poor handling of dogs both at household and community level and the need for instituting an intervention program targeted at controlling stray dogs and launching anti-rabies vaccination campaign at regular interval basis.

Key words: Addis Ababa, Domestic animals, Occurrence, Rabies, Wild animals.

291. Tamirat Assefa, Gail Davey, Nicole Dukers, Dawit Wolday, Alemayehu Worku, Tsehaynesh Messele, Belete Tigbaru, Wendelien Dorigo-Zetsma and Eduard J. Sanders. Overall HIV-1 prevalence in pregnant women over-estimates
HIV-1 in the predominantly rural population of Afar Region. EMJ. 2003; 41 supp.1:43-50.

Abstract
The appropriateness of sentinel sero-surveillance based upon antenatal clinic (ANC) attends to estimate HIV-1 prevalence in the general population has been questioned. In Ethiopia, where the population is heterogeneous and where economic and practical barriers to ANC attendance exist, problems of extrapolation may be exacerbated. We planned an unlinked anonymous sero-survey which included data on basic population characteristics to investigate whether sero-surveillance data from ANCs in Afar Region might be taken to represent the situation among the general population of the region. 371 pregnant women attending Dubti Hospital and Assayta Health Center were tested for HIV-1 (using a single ELLISA test) and active syphilis (RPR test). Socio-demographic characteristics were collected for each woman. Of the women tested, 278 (75%) were 28 years of age or younger.


Abstract
Background: Observation and focus group discussions during the first round survey indicated that women in the lowlands areas are more malnourished compared to the women in the highlands. Additional analysis was needed to verify the observation.

Objectives: To compare the levels and determinants of nutritional status of women living in lowland and highland areas in Limu wereda of Hadiya Zone, Southern regions.

Methods: Information on potential factors influencing nutritional status was gathered in two rounds from 450 mothers in three randomly selected peasants associations.

Results: Women living in the lowlands are more malnourished compared to women living in the highlands (31.0% in the lowlands and 19.1% in the highlands; Odds ratio= 1.62; 95% CI 1.1-2.4). Household size, agricultural production, age and parity were found to be similar among the two groups of women. However, religion, ethnicity, livestock holding (more in the lowland), land ownership (greater in the lowlands), education (more literate in the highlands) and types of illness (more malaria in the lowlands) were found to be significantly different among the two groups of women. The logistic regression analysis indicated that only agricultural production, sickness and education were associated with material malnutrition in the studied area.

Conclusion: Creating mechanisms and opportunities to increase agricultural production (in both lowland and highland) and women’s education as well as
providing better access to health care, particularly, in the lowlands are recommended to improve the situation.


Abstract

Background: Despite the use of measles vaccine, measles incidence in Ethiopia remains a serious public health concern. Progress towards the control of measles requires a national capacity to measure program effectiveness in infants attending the routine immunization.

Objective: to evaluate the effectiveness of the measles routine immunization activities in Addis Ababa.

Methods: this study evaluates pre- and post-vaccine antibodies in children attending for routine measles immunization in Addis Ababa. Infants who presented to 3 health centers between Septembers to November, 1998 for routine measles vaccination were enrolled in the study. In total 296 infants (median age 9 months) provided blood and oral-fluid samples, of which 230 (77%) returned to provide post vaccine samples (median interval of 15 days). screening of sera was undertaken using commercial indirect ELISA kit, and of oral fluids using an in house IgM- capture ELIAS.

Results: pre-vaccination serology showed 1.4% IgM positive, 2.0% IgM positive, and 91.3% and 85.0%, respectively, and 92.9% overall. The sero conversion rate was 92.6% (95% CI 88.2-95.7). Based on oral fluid results, 87.3% (95% CI 82.0-91.4) of children showed specific IgM antibody conversion.

Conclusion: These results are in support of the recommended age for measles vaccination in Addis Ababa, and show the merit of oral-fluid IgM screening as a non-invasive alternative to blood for assessing vaccine effectiveness.


Abstract

BACKGROUND: We explored the relevance of simple markers (clinical or laboratory markers not requiring sophisticated laboratories) in the decision of initiation of therapy in resource-poor settings.

METHODS: Among HIV-infected Ethiopian cohort participants, simple markers predicting short-term death were examined using time-dependent Cox proportional hazards models. Timing of hypothetical treatment was compared between guidelines using the simple markers (based on presence of at least one marker), guidelines recommended by the United States Department of Health and Human Services (based on CD4 cell count and viral load), and guidelines for resource-limited settings recommended by the World Health Organization (WHO).

RESULTS: From February 1997 to August 2001, 35 deaths were recorded among 155 HIV-positive participants. Simple independent predictors of death were low
body mass index, HIV-related conditions, anemia, and lymphocyte count < 1500 x 10(6)/l. In such time as was covered by our study, 135 (87%) of 155 cohort participants would have had the same management under both the simple markers and the DHHS guidelines, i.e., would have been treated (n = 114, 74%) or not treated (n = 21, 14%). Of the 114 participants hypothetically treated under either set of guidelines, 91 (80%) would have started treatment at the same time. Application of the WHO guidelines for resource-limited settings (without CD4 cell counts) would have resulted in 11 participants dying without ever meeting a treatment indication during regular follow-up visits.

**CONCLUSION:** Simple markers for the initiation of highly active antiretroviral therapy were identified among HIV-infected Ethiopian patients. The validity of these markers for monitoring patients’ improvement following therapy remains to be evaluated.


**Abstract**

**OBJECTIVE:** To assess changes in sexual behaviors among male factory workers in Ethiopia.

**DESIGN:** Open cohort studies in two factories near Addis Ababa.

**DATA AND METHODS:** At intake and biannual follow-up visits, data were collected on sexual behaviors including casual sex, sex with commercial sex workers (CSW), condom use, and history of sexually transmitted diseases (STDs) as indicated by genital discharge and genital ulcer. Health education, HIV testing, and counseling were offered to all participants.

**RESULTS:** Between February 1997 and December 1999, 1124 males were enrolled in the two cohort studies. At intake, the prevalence of casual sex in the past year, sex with CSWs, condom use with the last casual partner, history of genital discharge in the past 5 years, and history of genital ulcer in the past 5 years were 9.7, 43.4, 38.8 (Akaki site only), 10.6 and 2.1%, respectively. At the Wonji site, the intake prevalence of casual sex, sex with CSW, and history of genital discharge decreased significantly by calendar year between 1997 and 1999. At both sites combined, between the first and the fourth follow-up visits, there was a decline in the proportion of males reporting recent casual sex (from 17.5 to 3.5%, P < 0.001), sex with CSWs (from 11.2 to 0.75%, P < 0.001), and genital discharge (from 2.1 to 0.6%, P = 0.004).

**CONCLUSION:** There was a decline over time in risky sexual behaviors reported by cohort participants. Part of this decline occurred independently of cohort interventions.

296. **Yared Mekonnen, Dukers NH, Eduard J. Sanders, Wendelien Dorigo-Zetsma, Dawit Wolday, Schaap A., Geskus RB, Roel A. Coutinho and Arnold L.**
**Fontanet. Simple markers for initiating antiretroviral therapy among HIV-infected Ethiopians. AIDS. April 2003; 17(6):815-819.**

**Abstract**

**BACKGROUND:** We explored the relevance of simple markers (clinical or laboratory markers not requiring sophisticated laboratories) in the decision of initiation of therapy in resource-poor settings.

**METHODS:** Among HIV-infected Ethiopian cohort participants, simple markers predicting short-term death were examined using time-dependent Cox proportional hazards models. Timing of hypothetical treatment was compared between guidelines using the simple markers (based on presence of at least one marker), guidelines recommended by the United States Department of Health and Human Services (based on CD4 cell count and viral load), and guidelines for resource-limited settings recommended by the World Health Organization (WHO).

**RESULTS:** From February 1997 to August 2001, 35 deaths were recorded among 155 HIV-positive participants. Simple independent predictors of death were low body mass index, HIV-related conditions, anemia, and lymphocyte count < 1500 x 10^6/l. In such time as was covered by our study, 135 (87%) of 155 cohort participants would have had the same management under both the simple markers and the DHHS guidelines, i.e., would have been treated (n = 114, 74%) or not treated (n = 21, 14%). Of the 114 participants hypothetically treated under either set of guidelines, 91 (80%) would have started treatment at the same time. Application of the WHO guidelines for resource-limited settings (without CD4 cell counts) would have resulted in 11 participants dying without ever meeting a treatment indication during regular follow-up visits.

**CONCLUSION:** Simple markers for the initiation of highly active antiretroviral therapy were identified among HIV-infected Ethiopian patients. The validity of these markers for monitoring patients' improvement following therapy remains to be evaluated.

---


**Abstract**

**OBJECTIVE:** To assess changes in sexual behaviors among male factory workers in Ethiopia.

**DESIGN:** Open cohort studies in two factories near Addis Ababa.

**DATA AND METHODS:** At intake and biannual follow-up visits, data were collected on sexual behaviors including casual sex, sex with commercial sex workers (CSW), condom use, and history of sexually transmitted diseases (STDs) as indicated by genital discharge and genital ulcer. Health education, HIV testing, and counseling were offered to all participants.

**RESULTS:** Between February 1997 and December 1999, 1124 males were enrolled in the two cohort studies. At intake, the prevalence of casual sex in the
past year, sex with CSWs, condom use with the last casual partner, history of genital discharge in the past 5 years, and history of genital ulcer in the past 5 years were 9.7, 43.4, 38.8 (Akaki site only), 10.6 and 2.1%, respectively. At the Wonji site, the intake prevalence of casual sex, sex with CSW, and history of genital discharge decreased significantly by calendar year between 1997 and 1999. At both sites combined, between the first and the fourth follow-up visits, there was a decline in the proportion of males reporting recent casual sex (from 17.5 to 3.5%, < 0.001), sex with CSWs (from 11.2 to 0.75%, < 0.001), and genital discharge (from 2.1 to 0.6%, = 0.004).

CONCLUSION: There was a decline over time in risky sexual behaviors reported by cohort participants. Part of this decline occurred independently of cohort interventions.

2004


Abstract

Background: Infection with Entamoeba histolytica is a worldwide public health problem. Diagnosis of this parasite by conventional microscopy is almost impossible, because it is morphologically indistinguishable from E. dispar, which is non pathogenic.

Objective: To detect and differentiate E. histolytica from E. dispar by PCR technique and to determine the prevalence of trophozoites and cysts of E. histolytica /E. dispar by microscopy of fresh stool specimen among out patients of Jimma University Hospital to provide baseline data for further study.

Method: A cross-sectional study was conducted from Feb. 24 – Mar. 23, 2003 in Jimma University Hospital among patients with clinical signs and symptoms of intestinal complaints. The stool samples were examined microscopically and by PCR and Solution Hybridization Enzyme Linked Immuno assay (SHELA).

Results: Out of 228 stool specimens collected, 30(13.2%) E. histolytica/E. dispar were observed by microscopic examination of which 6(2.6%) were trophozoite and 24 (10.5%) were cysts. From the total 30(13.2%) microscopically observed E. histolytica /E. dispar, PCR-SHELA detected 28(12.3%) E.dispar while no E.histolytica DNA was found. Infections with one or more intestinal parasites were common, 151 (66.2 %). By far the most common intestinal parasitic infection was Ascaris lumbricoides, 87 (38.2%) followed by Trichuria trichiura, 53(23.3%).

Conclusion: Infection with E. histolytica was not found in all the stool samples examined. Neither the trophozoites nor the quadrinucleated cysts reported by microscopy were those of E. histolytica. Our finding suggests that among the patients studied, the commonly reported trophozoites and cysts belong to the non-pathogenic E. dispar, which requires no treatment at all. Therefore, the commonly reported complaints of diarrhea require alternative explanation since the routine diagnostic microscopy of amebiasis is unsatisfactory.

**Abstract**

This is a review of the work done on shigellosis from 1974 to 1992 and its very recent situation in Ethiopia. Shigellosis is a highly infectious disease of worldwide significance. Its incidence has always been the top in tropical and subtropical regions, where the general poor living condition is a prevailing phenomenon. Because of poor quality of drinking-water supplies, large quantity of domestic house flies, lack of well established sewage system, and too much crowness of living quarters, it was found evident for shigellosis to be one of the major health problems in developing countries like Ethiopia. It was thus, relevant to look into the status of the disease shigellosis in Ethiopia starting from the period of 1974, since there had not been enough work done as a laboratory based evidence of this disease before this period. The works of Afeworki Gebre-Yohannes, conducted between 1974 and 1992 could be considered as the first few attempts to indicate the prevalence of the major subgroups and subtypes of *shigellosis* spicous isolated from Ethiopian patients with bloody diarrhea. In addition to their prevalence in developing countries, *shigellosis* strains are also well noted to be notorious due to their ability to develop multi-drug resistance. Researchers like Afeworki Gebre-Yohannes and others have also continuously addressed this point throughout the past years, with which they were able to indicate the resistance patterns of all the various groups, subgroups and subtypes of the *shigellosis* strains and the emergence of new single- or multiple-drug resistant features among the Ethiopian isolates. The molecular characterization of the most prevalent subgroup and subtypes of the *shigellosis* strains was also seriously addressed by Afeworki Gebre-Yohannes and his group for the first time in Ethiopia starting from 1974. Plasmid-mediated single- and multi-drug resistant patterns of these strains were also analyzed up to the current period. Similarly, characterization of some virulence factors for these *shigellosis* stocks have been continued using the haemagglutination and iron-acquiring mechanisms of their strains.

**Key words:** Antibiotic resistance, Ethiopia, Prevalence, *Shigelllosis*


**Abstract**

**Background:** In recent years malaria is becoming endemic in highland areas beyond its previously known upper limit of transmission. Assessment of the situation of the disease in such areas is necessary in order to institute appropriate control activities.

**Objectives:** The objectives of the study were to determine the prevalence of malaria, the parasite species involved and *Anopheles* species responsible in local malaria transmission.

**Methods:** A systematic sampling technique was used to select survey households. Blood films were collected monthly between October and December 1999 from
all household members by a trained and experienced laboratory technician. Larval and adult mosquitoes were monthly collected using different methods from September 1999 to October 2000.

**Results:** Among 2136 examined blood films, 78 (3.7%) of them were malaria positive of which 54 (69%) were due to *Plasmodium vivax* and 24 (31%) due to *P. falciparum*. *Anopheles gambiae* s. l. (presumably *An. arabiensis*) and *An. christyi* were the dominant man-biting species, with the former being the major vector in the area. Both these species were found to be more of exophagic and active in the early evening, unlike *An. pharoensis*, which showed an endophagic tendency.

**Conclusion:** This study indicated that indigenous transmission of malaria occurs in the study area. Transmission is reckoned to be maintained by low density of vector species for short period of time under favorable conditions. Therefore, the acquisition of communal immunity is interrupted by long duration of non-malaria season leading to the occurrence of recurrent malaria epidemics.


**Abstract**

High prevalence’s of intestinal amoebiasis are commonly reported by microscopy in Ethiopia. In order to confirm the actual occurrence of Entamoeba histolytica we collected 108 stool specimens from different hospitals & health centers from patients in whom haematophagous trophozoites were believed to be found. We detected only a single E. histolytica case while 77 (71.3%) were E. dispar and the remaining 30 samples were negative for both species by real-time PCR based on the small subunit ribosomal RNA gene sequence of E. histolytica and E. dispar. The tradition of microscopy in a routine diagnostic set-up appears unsatisfactory to reliably differentiate rbc-engulfing amoeba from non-invasive amoeba in wet smears.

**Key words:** Entamoeba histolytica, Entamoeba dispar, hematophagous, Real-time polymerase chain reaction


**Abstract**

In Ethiopia, it is generally unknown what proportion of the amoebic infections commonly found, by microscopy, in humans are caused by non-invasive Entamoeba dispar rather than the potentially invasive E. histolytica. Faecal samples were therefore collected from 363 primary-school students and 409 prisoners from various regions of Ethiopia. Each of these samples was checked for Entamoeba infection by the microscopically examination of for mol-ether concentrates. DNA was then extracted from the 213 samples (27.6%) found Entamoeba-positive, and run in a real-time PCR with primers, based on the SSU-rRNA gene sequences of E. histolytica and E. dispar, that allow DNA from the
two species to be distinguished. Although E. dispar DNA was identified in 195 (91.5%) of the 213 samples checked by PCR, no E. histolytica DNA was detected. This finding is consistent with the conclusion of a previous, smaller investigation: that many amoebic infections in Ethiopia are incorrectly attributed to E. histolytica and then treated, unnecessarily, with amoebicidal drugs.


Doesn’t have an abstract but full article will be found in this link…
http://jcm.asm.org/content/42/8/3909.long


Abstract

Background: Amebic liver abscess is the most common manifestation of extra-intestinal amebiasis. Although a high prevalence of intestinal amebiasis is reported in Ethiopia, information about the prevalence of confirmed amebic liver abscess is very scanty. Our previous study using the molecular technique proved that there is a considerable over diagnosis of intestinal amebiasis by using microscopy alone, while cases of truly invasive Entamoeba histolytica appear to be very rare.

Objective: To assess the occurrence of amebic liver abscess among admitted patients at Tikur Anbessa Hospital.

Method: A retrospective analysis was conducted from clinical records of patients who were admitted to the medical wards of Tikur Anbessa Hospital, on suspected cases of liver abscess over a 20 year period, from 1982 to 2002.

Results: Only 47 suspected liver abscess cases; (2 suspected liver abscesses per 5854 patients per year) were admitted and treated in Tikur Anbessa Hospital in the past 20 years. Liver abscess appears to be rare among patients admitted in the hospital. The most frequent diagnosis of liver abscess was of amebic origin 35(74%).

Conclusion: The total number of hepatic amebic liver abscess is extremely low considering the high number of reported intestinal amebiasis cases by microscopy in routine laboratory diagnosis, suggesting over diagnosis.


Abstract

Five simple and rapid HIV antibody detection assays viz. Determine, Capillus, Oraquick, Unigold and Hemastrip were evaluated to examine their performance and to develop an alternative rapid test based testing algorithm for voluntary counseling and testing (VCT) in Ethiopia. All the kits were tested on whole blood,
plasma and serum. The evaluation had three phases: Primary lab review, piloting at point of service and implementation. This report includes the results of the first two phases. A total of 2,693 specimens (both whole blood and plasma) were included in the evaluation. Results were compared to double Enzyme Linked Immuno-Sorbent Assay (ELISA) system. Discordant EIA results were resolved using Western Blot. The assays had very good sensitivities and specificities, 99-100%, at the two different phases of the evaluation. A 98-100% result agreement was obtained from those tested at VCT centers and National Referral Laboratory for AIDS (NRLA), in the quality control phase of the evaluation. A testing strategy yielding 100% [95% CI; 98.9-100.0] sensitivity was achieved by the sequential use of the three rapid test kits. Direct cost comparison showed serial testing algorithm reduces the cost of testing by over 30% compared to parallel testing in the current situation. Determine, Capillus/Oraquick (presence/absence of refrigeration) and Unigold were recommended as screening, confirmation and tiebreaker tests, respectively.


Abstract
A retrospective study was conducted to examine trends in HIV-1 prevalence among visa applicants between the years 1993 to 2001 in Urban Ethiopia. A total of 63,869 visa applicants were screened during these nine years period. The majority of them (79.5%) were females. Their mean age was 31.6 and 25.7 years for males and females, respectively. HIV-1 prevalence ranged from 6.8% in 1993 to 10.4% in 1997 (test for trend: p<0.001), while it seems stabilized at around 11% after 1997. The overall period prevalence was 9.5%. The peak prevalence was documented in the age group 25-29 for females (12.1%) while it was in the age group 30-34 for males (11.4%). This study, therefore, confirms the severity of the HIV-1 epidemic in the country. Visa applicants can be used as a sentinel population for monitoring trends in HIV-1 prevalence in the country, although additional socio-demographic information would be useful for better interpretation of such data.


Abstract
Rabies is a widespread disease in Ethiopia. Dogs cause the majority of human rabies cases and resultant post exposure treatment (PET) in Ethiopia and in the city of Addis Ababa. The data analyzed to determine the occurrence of rabies in Addis Ababa was gathered at the zooness laboratory of Ethiopian Health and Nutrition Research Institute (EHNRI) for two years (2001-2002). Of the total of 2875 people who were given post exposure (PET), 90.9% were due to dog bites. During the same period, 12 human rabies cases were recorded and 2% of PET was due to contacts made with rabid human subjects. The remaining 7.1% of PET was
due to cat, wild animal (hyena, jackal) and domestic animal bites and contacts. The data show the importance of rabies as an increasing public health problem in Addis Ababa. Strict registration and control of stray dogs is strongly recommended.

Key words: Addis Ababa, Animals, Humans, Post exposure treatment, Rabies


Abstract

OBJECTIVE: To determine risk factors associated with the failure of syndromic management of sexually transmitted diseases (STDs) among women seeking treatment in primary healthcare centre in Addis Ababa, Ethiopia.

METHODS: Women with symptomatic STDs seeking care in a health centre were prospectively enrolled. A total of 259 women were interviewed and underwent clinical examination; 106 were enrolled and received syndromic STD treatment and 91% returned for follow up. Logistic regression analysis was used to identify risk factors associated with treatment failure.

RESULTS: Of the 106 women enrolled and presenting with symptomatic STDs 67% were HIV sero positive. Syndromic STD treatment did not result in clinical improvement in 30% of the women. Having genital ulcer disease, genital ulcer disease with genital discharge, genital warts, bacterial vaginosis and plasma HIV-1 load >10,000 copies RNA/ml or being HIV sero positive were all significantly associated with treatment failure. In multivariate analysis, however, only genital ulcer disease was significantly associated with treatment failure.

CONCLUSION: In our setting, the association between HIV and genital ulcer disease caused by herpes may, therefore, be the reason for the failure of treatment.


Abstract

OBJECTIVES: To examine the impact of sexually transmitted diseases (STD) syndromic treatment of genital shedding of HIV and the impact among women in whom STD treatment was not successful.

DESIGN: Seventy-one HIV-infected women were included; 60 had symptomatic STD [72% with genital discharge syndrome (GDS) and 28% with genital ulcer syndrome (GUS)] and 11 controls did not have symptomatic STD. Cervical HIV load in 94% women was measured at baseline and after STD treatment.

RESULTS: Cervical HIV load at entry was significantly higher in women with symptomatic STD than in controls [median, 3.15; interquartile range (IQR), 1.90-
3.34 versus median, 1.90; IQR, 1.90-2.19 log10 RNA copies/swab, respectively; P = 0.024]. Women with STD were also more likely to have detectable cervical HIV RNA (68% versus 27%; P = 0.016). Cervical HIV load was significantly higher in women with GUS than in those with GDS (median 3.46; IQR, 2.84-4.18 versus median, 2.83; IQR, 1.90-3.31 log10 copies/swab; P = 0.019). There was no significant reduction in genital HIV shedding after syndromic treatment of GDS or GUS. However, significant decreases were limited to only those with clinical improvement (median, 2.91; IQR, 1.90-3.45 versus median, 2.25; IQR, 1.90-3.08 log10 RNA copies/swab, respectively; P = 0.006). GUS was significantly associated with treatment failure, independent of plasma HIV RNA load and CD4 T-cell count (odds ratio, 4.79; 95% confidence interval, 1.32-17.46).

CONCLUSIONS: The fact that STD syndromic treatment impacts very little in reducing genital HIV shedding underscores the need for appropriate validation of STD syndromic diagnosis and management to control heterosexual transmission of HIV.


Abstract
From a prospective cohort study on tuberculosis/human immunodeficiency virus (TB/HIV) interaction in Addis Ababa, Ethiopia, drug susceptibility results were available for 94 TB patients (46% HIV-infected). Resistance to one or more drug(s) was detected in 21 (22.3%) and multidrug resistance in five (5.3%) patients. Occurrence of resistance was not related to HIV status or outcome after 24 months of follow-up. However, among HIV-infected TB patients who died during follow-up, survival time in those with a resistant Mycobacterium tuberculosis strain was significantly shorter compared to those with a sensitive strain (6 vs. 13 months). Early detection of drug resistance and timely treatment change can therefore have a positive impact on survival in HIV-infected TB patients.


Abstract
The occurrence of intestinal parasites in patients referred to the Parasitology Laboratory of the Ethiopian Health and Nutrition Research Institute (EHNRI), was recorded for four consecutive years, 1998-2001. Based on the stool appearance i.e. watery, loose, mucoid and bloody, 442 diarrheal samples were particularly selected to allow diagnosis of intestinal parasites with emphasis on coccidian intestinal parasites. Wet saline mounts and for mol ether concentration method with logul's iodine were performed for the detection of cysts, ova, trophozoites and larvae of intestinal parasites. Modified Ziehel Nelseen staining of stool smears was used to identify Cryptosporidium parvum and Isospora belli. The overall detection rate was 79.4% (351/442). The spectrum of positivity with any
protozoa was 54.3% (240/442) and helminthes 25.1% (111/442). Cryptosporidium parvum was identified in 92/442 (20.8%). Isopora belli was identified among 35/442 (7.9%): Entamoeba histolytica/dispar scored second with positivity rate of 17.0% (75/442) and Giardia lamblia was found in 38/442 (8.6%) stool samples. As compared to protozoan parasites, detection rate with helminthes was very low. Among the helminthes, Strongyloides stercoralis was found in 38/442 (8.6%). This information strengthens the importance of intestinal protozoan parasites with recognition of the opportunistic parasites as major causes of diarrhoea. Their role in HIV/AIDS patients cannot be over-emphasized. Further awareness for the need of establishing different parasitological techniques at health service giving centers would enhance better understanding and management of diarrheal illness.


Abstract

OBJECTIVES: To assess the performance of routine syphilis screenings during 5 year follow up of Ethiopian factory workers, participating in a cohort study on HIV/AIDS.

METHODS: Syphilis serology test results of factory workers, who each donated at least six blood samples, were evaluated. Screening in 1997-8 had been performed by the Treponema pallidum particle agglutination (TPPA) assay and in 1999-2001 by the rapid plasma regain (RPR) test. TPPA had been followed by RPR or RPR by TPPA, in case of a positive screening result. Samples of study subjects showing inconsistent sequential TPPA and/or RPR results were retested independently by three laboratory technicians.

RESULTS: A total of 540 cohort participants (8.3% HIV positive at enrollment) donated 4,376 blood samples (mean 8.3 per subject). From 93 of the 176 participants with at least one positive TPPA result during follow up, 152 samples were retested by RPR and/or TPPA. Based on the revised syphilis test results, the 540 cohort participants were classified as having no (70.5%), past (20.6%), prevalent (6.9%), or incident (2.0%) syphilis. The RPR screening test was difficult to interpret and yielded 8.2% biological false positive (BFP) RPR results or 3.2% if weak positive results were excluded. There was no correlation between HIV infection and BFP RPR reactions. Sample mix-ups were detected in 1.2%.

CONCLUSION: Evaluation of routine syphilis screening as performed in a long term cohort study on HIV/AIDS in Ethiopia showed difficulties encountered in syphilis screening programs such as a high percentage of BFP RPR, inconsistencies in interpretation of the RPR test, and sample mix ups. The findings stress the need to develop a syphilis screening assay that is easy to perform and interpret and to implement quality assurance programs.

313. Workinesh Ayele, Pollakis G, Almaz Abebe, Bitew Fisseha, Belete Tegbaru, Girma Tesfaye, Yohannes Mengistu, Dawit Wolday, Van Gemen B, Goudsmit J, Wendelien Dorigo-Zetsma and de Baar MP. Development of a nucleic acid sequence-based amplification assay that uses gag-based molecular beacons to

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC387546/?tool=pubmed

Abstract

A gag-based molecular beacon assay utilizing real-time nucleic acid sequence-based amplification technology has been developed to differentiate between the two genetic sub clusters of human immunodeficiency virus type 1 (HIV-1) subtype C (C and C') circulating in Ethiopia. Of 41 samples, 36 could be classified as C or C' by sequencing of the gag gene. All 36 isolates were correctly identified by the gag beacon test. Three isolates with genomes that were recombinant in gag were unambiguously typed as belonging to the C' sub cluster. Further analysis revealed that these contained the most sequence homology with a reference sub cluster C' sequence in the target region of the beacon and hence were correct for the analyzed region. For one sample, sequencing and gag molecular beacon results did not match, while another isolate could not be detected at all by the beacon assay. Overall, high levels of sensitivity and specificity were achieved for both beacons (90.5% sensitivity and 100% specificity for the C beacon and 100% sensitivity and 95.2% specificity for the C' beacon). The availability of a diagnostic test which can quickly and reliably discriminate between C and C' HIV-1 infections in Ethiopia is an important first step toward studying their respective biological characteristics. As the assay is specific to the Ethiopian HIV-1 subtype C epidemic, it will contribute to characterizing the circulating viruses in this population, thereby generating the information necessary for the development of a potential efficacious HIV-1 vaccine appropriate for the Ethiopian context.


http://jid.oxfordjournals.org/content/190/2/365.long

Abstract

The herpes simplex virus type 2 (HSV-2) and human immunodeficiency virus (HIV) epidemics are believed to fuel each other, especially in sub-Saharan countries. In Ethiopia during 1997-2002, a retrospective study was conducted to examine risk factors for infection and transmission of HSV-2, in a cohort of 1612 factory workers. Prevalence of HSV-2 sero positivity at enrollment was 40.9%, and incidence of sero conversion was 1.8 sero conversions/100 person-years (PY), which decreased over time. Independent risk factors for sero positivity were having an HSV-2-seropositive partner, female sex, HIV antibodies, positive Treponema pallidum particle agglutination assay result, older age, low education level, and orthodox religion. These same factors were independent risk factors for HSV-2 sero conversion, with the exception of the latter 3. Most HSV-2-infected persons did not report symptoms. Among 41 monogamous HSV-2-serodiscordant heterosexual couples, incidence of HSV-2 sero conversion was 20.75sero
conversions/100 PY for women and 4.93 sero conversions/100 PY for men. The high burden of both HSV-2 and HIV infection in Ethiopia warrants stringent control measures.

2005


Abstract
In the indigenous health care delivery system of Ethiopia, numerous plant species are used to treat diseases of infectious origin. Regardless of the number of species, if any of such claims could be verified scientifically, the potential significance for the improvement of the health care services would be substantial. The objective of this study was, therefore, to determine the presence of anti-microbial activity in the crude extracts of some of the commonly used medicinal plants as well as to identify the class of compounds in the plants that were subjected to such screening. Thus, the crude methanol, petroleum ether and aqueous extracts of 67 plant species were subjected to preliminary screening against 10 strains of bacterial species and 6 fungal strains using the agar dilution method. A sample concentration of 250-2000 microg/ml and 500-4000 microg/ml were used for the bacterial and fungal pathogens, respectively. The results indicated that 44 different plant species exhibited activity against one or more of the bacteria while one species, viz., Albizzia gummifera showed activity against all the 10 bacteria at different gradient of dilution. Twenty three species inhibited or retarded growth of one or more organisms at dilution as low as 250 microg/ml. Extracts of same plants species were also tested against six different fungal pathogenic agents of which eight species showed growth inhibition against one or more of the organisms. Trichila emetica and Dovyalis abyssinica, which inhibited growth of four and five fungal strains at 100 microg/ml concentrations, respectively, were the most promising plants. Chemical screening conducted on the extracts of all the plants showed the presence of several secondary metabolites, mainly, polyphenols, alkaloids, tannins sterols/terpenes, saponins and glycosides. The plants containing more of these metabolites demonstrated stronger anti-microbial properties stressing the need for further investigations using fractionated extracts and purified chemical components.

Key words: Anti-microbial activity, Phytochemical screening, Medical plants, Extracts.

Abstract

Background: There are quite large numbers of traditionally used plants that are used to treat ailments associated with fever in the ethnomedical system of Ethiopia. Most of them, however, have not been subjected to scientific investigation for their efficacy and safety.

Objective: To evaluate the antipyretic effects of the aqueous and ethanol extracts of the leaves of Ajuga remota and Lippia adoenesis.

Design: An experimental design, in which five groups of in-house bred albino mice weighing 30-35 g representing positive and negative control, and three dose levels extract treated groups, respectively was employed. The extracts, standard drugs and distilled water were administered into GIT by gavages to evaluate the antipyretic effect after inducing pyrexia in mice.

Results: All extracts of both plants that were administered orally at doses of 50, 100 and 200 mg per kg showed antipyretic property. The antipyretic effects were observed to be dose dependent. In both plants, the aqueous extract was found to have more potent antipyretic effect than the ethanol extract. No mouse manifested toxic effects at any dose levels of all the extracts for the observed period of two weeks.

Conclusion: The present study show that both extracts of the investigated plants have got antipyretic effects and the extracts are effective and safe at the doses tested. This supports the traditional claim or use of these plants.

Key words: Ajuga remota, Lippia adoenesis, Yeast, Extracts, Antipyretic activity, Rectal temperature.


Abstract

To study the determinants of CD4% and CD4 counts among HIV negative Ethiopians, and to identify factors susceptible to explain the low CD4 counts observed among Ethiopian subjects. Cohort studies among factory workers in Akaki and Wonji, Ethiopia. Clinical and laboratory examinations, including determination of HIV serological status and T-cell subsets, were performed during follow-up visits every six months. In addition, micronutrients (retinol, carotenoids, tocopherol, transferrin receptor, and selenium) plasma concentrations were determined in a subset of 38 HIV-positive and 121 HIV-negative participants. HIV-negative participants with at least one CD4 count measurement were 157 females in Akaki, 203 males in Akaki, and 712 males in Wonji. CD4 counts were independently and positively associated with body mass index (through an increase in lymphocyte counts), female gender (through an increase in CD4%), cigarette smoking (through an increase in CD4%), khat chewing (through an increase in both lymphocyte counts and CD4%), and Akaki study site (through a large increase in lymphocyte counts compensating a decrease in CD4%). Intestinal parasitic infections were not associated with CD4% or CD4
counts. Retinol, carotenoids, and α-tocopherol plasma concentrations decreased with HIV infection and advancing immunosuppression, but were not associated with CD4 counts among HIV-negative subjects. Low body mass index among Ethiopians may have contributed to their overall low CD4 counts. Other factors remain to be elucidated.

**KEYWORDS:** CD4 counts, Micronutrients, BMI, Altitude, Ethiopia.


**Abstract**

**Background:** The use/abuse of psychoactive drugs such as khat leaves (*Catha edulis*) are believed to alter one’s moods or emotional state either through the sustained release or inhibition of neurotransmitters, thereby enhancing or dampening the response of the individual. Most people whose thinking is wrapped by continued drug use may not be able to see the harm resulting from their actions. Thus, there has been a strong linkage between drug use and casual or unsafe sexual practice despite serious concern about HIV infection.

**Objective:** Khat chewing is known to be a widespread habit in Ethiopia. This study is, thus, aimed at investigating whether or not the use of this psycho stimulant alone or in conjunction with other behaviors associated with its use constitutes a risk behavior that accelerates the spread of HIV infection. Methods: A case-control study involving 850 human subjects, i.e. 425 HIV positives (cases) and 425 HIV negatives (control) was conducted using rapid test algorithm and/or western blot method for determination of HIV status. Both groups were interviewed about their probable khat chewing habits, alcohol intake, multiple sexual practice, and the like, using a structured questionnaire. The data were analyzed using SPSS/PC + statistical software.

**Results:** Risk behaviors for HIV infection such as khat chewing in conjunction with alcohol intake and casual sex were observed more in people with HIV than in the control group. Khat chewing was significantly associated with multiple sexual practice (OR = 4.03, 95% CI = 3.02, 5.39), which in turn was strongly linked with HIV cases (OR = 3.52, 95% CI = 2.64, 4.69). thus, more than the non-chewers, khat chewers constituted significantly higher number of HIV cases (OR = 2.32, 95% CI = 1.75, 3.07).

**Conclusion:** Khat chewing is a risk behavior for the spread of HIV infection. Mainstreaming of khat control into national development planning initiatives is recommended.


**Abstract**
The pathogenesis of persistently elevated plasma HIV viremia in patient’s co-infected with tuberculosis (TB) during anti-TB treatment in Africans remains unknown. We examined the expression of chemokine receptors CCR5 and CXCR4 on CD4+ T cells and plasma chemokine levels of macrophage inflammatory protein (MIP)-1alpha, MIP-1beta, regulated on activation normal T expressed and secreted (RANTES), and stromal cell-derived factor (SDF)-1alpha among TB patients with HIV co infection during the first 2 months of anti-TB treatment. During treatment of TB, the plasma HIV-1 load and CD4+ T-cell count remained unchanged. Levels of CCR5 and CXCR4 expression on CD4+ T cells as well as plasma levels of chemokines remained persistently elevated during anti-TB treatment. Persistently elevated plasma HIV viremia also paralleled persistently elevated expressions of activated CCR5+ or CXCR4+ CD4+ T cells. These results suggest that increased expression of CCR5 and CXCR4 on an activated CD4+ T-cell population coupled with persistently elevated chemokines may provide a suitable condition for continuous replication of HIV associated with TB co infection. This, in turn, may contribute, at least in part, to the observed persistently elevated plasma HIV viremia in co infected patients despite anti-TB treatment.


Abstract

Background: Investigation to identify factors that determine the clinical outcome of malaria is essential for the improvement of patient care in severe malaria cases. Objectives: To assess the parasitologic and haemato-immunological characteristics of malaria patients with and without HIV co-infection. Methods: Immune cells were enumerated using the Flow cytometer method. Haematological values were determined using the Coulter Counter system. Malaria parasite detection was conducted using standard microscopy; and HIV testing was conducted using Determine, ELISA and Western blot methods. Results: A total of 253 study participants, out of which 87 were control cases, and 166 were acute malaria patients (49.4% due to P. falciparum, 48.8 % due to P. vivax, 1.8% due to mixed infection) were included. Eight out of 166 (4.8%) of the malaria patients were found to be HIV positive. Asexual stage parasitemia was increased in HIV positive Falciparum patients (P=0.031). However, the increase in parasitemia in HIV positive vivax malaria patients was not significant. HIV infection is seen to aggravate the decrease in Haemoglobin (Hgb), Haematocrit (Hct) and Platelet (Plt) levels. Lymphopenia, CD4+ lymphocytopenia, eosinopenia, monocytes and thrombocytopenia were found to be higher in both malaria infections compared to the control ones (P<0.05).
Conclusion: Care should be taken when using immune cell counts for research or diagnostic purposes in malaria patients. The effects of HIV on parasitologic and haematologic values should be taken into account during the provision of care to HIV positive malaria patients.


Abstract

408 non-selected samples were obtained from healthy, adult individuals donating blood at the Ethiopian Red Cross Society-National Blood Transfusion Service. All samples were screened for HIV is using the Vironostika Ag/Ab test, the Amplicor DNA PCR and examined for the presence of HIV reverse transcriptase (RT) using the ExaVir Load test (version 2). A panel of supplementary tests was used to evaluate the HIV status of the discordant samples and to confirm positivity. One aim was to assess an RT based test for screening for HIV in comparison with other more conventional tests. An HIV-prevalence of 3.4 % (14/408) was found. The Vironostika Ag/Ab test produced 391 negative, and according to the supplementary testing, 14 true- and three false- positive test results. The corresponding figures for the Amplicor DNA PCR test was 384 negative, 14 true- and two extra probably false -positive samples. In addition, the DNA PCR generated eight indeterminate results. The colorimetric version of the ExaVir load test exhibited 100 % specificity and detected RT in 13 of the true positive samples, but failed to detect one sample containing 200 HIV RNA copies /mL. This sample was detectable in the fluorimetric version of the test. The detection of RT activity in addition to the currently used markers would seem to have a potential for use in blood screening.


Abstract

The practice of traditional medicine for the control of fertility in most parts of Ethiopia is based on the uses of plant medicines for many years. The fact that herbal medicines have been employed for such a long time does not guarantee their efficacy and safety. The aim of the present study was, therefore, to carry out phytochemical screening, efficacy and safety studies on one of the traditionally used anti-fertility plants: Rumex steudelii. The secondary metabolites of the root of this plant were determined. The methanolic extract of the roots of this plant were investigated for their anti-fertility activity in female rats and oral LD50 was determined in mice. The identification of the secondary metabolites showed that the roots of the plant contained phytosterols and polyphenols. It was found that the extract reduced significantly (p<0.01) the number of litters. It also produced
anti-fertility effect in a dose dependent manner and the contraceptive effect was manifested for a definite period of time. Furthermore, the extract prolonged significantly the estrus cycle (p<0.05) and the diestrous phase (p<0.01) of the rats. The wet weights of the ovaries and uterus were shown to be reduced significantly (p<0.01) and (p<0.05), respectively. The oral LD50 of the extract was found to be 5 g/kg in mice. All these observations suggest that the extract has anti-fertility effect and is safe at the effective anti-fertility doses employed in this study. 

**Key words:** Anti-fertility, Estrus cycle, Female rats, LD50, Rumex steudelii extract, Secondary metabolites


Abstract

**Background:** The practice of traditional medicine for the control of fertility in most parts of Ethiopia is based on the uses of plant medicines for many years. Rumex steudelii Hochst (Polygonaceae), locally known as "Tult" or "Yeberemelas" is one of the traditionally used anti-fertility plants in Ethiopia. In our previous study, the methanolic extract of R. steudelii root was found to show anti-fertility activity in female rats.

**Objectives:** The present study focused further on the possible mechanisms of the anti-fertility effect of the methanolic extract of R. steudelii.

**Methods:** The effect of the extract on implantation, the uterus weight of immature ovariectomized rats and serum estrogen-progesterone ratio was evaluated. Its effect on isolated guinea pig uterus in the presence and absence of uterine muscle contractions inhibitors was also assessed. Test for in vivo abortifacient effect was also carried out.

**Results:** It was found that the extract decreased the number of implantation sites significantly. At a contraceptive dose, it was also observed to have no estrogenic activity in immature rat bioassay. The extract did not affect the serum estrogen-progesterone ratio. It produced concentration dependent increase in uterine muscle contractions similar to those of the standard drug, oxytocin. Incubation of the tissue with three uterine muscle contractions inhibitors revealed that the extract produced uterine contractions perhaps by activating muscarinic and/or histaminic receptors. The in vivo abortifacient effect was not seen upon administration of both lower and higher doses of the extract in pregnant rats.

**Conclusion:** All these observations suggest that the extract produced anti-fertility effect mainly by inhibiting implantation though ant estrogen, progesterone and uterotonic effects could as well be possible mechanisms.


Abstract

The ethnobotanical study on edible wild plants was carried out from May to December, 2001, in four districts of Ethiopia. The study areas included the rural
and semiurban settings of Alamata, Cheha, Goma, and Yilmana Denssa districts of Tigray, Southern Peoples, Oromiya, and Amhara regional states, respectively. Voucher plant specimens were collected along with ethnobotanical information, and scientific names were determined. One hundred and fifty two plant parts from 130 species were recognized and consumed in these districts. Children consumed more wild plants during seasons of food availability (sufficient crop stock) than adults. There was marked increase in quantity and number of wild plant species consumed during food shortage and famine. A few of the reportedly edible species caused health problems that sometimes lead to fatality. Research into the safety and nutritional composition of edible wild plants and fungi is warranted. Selected edible wild plant species should be promoted as supplements to dietary variety and/or bridging the hungry periods of food shortage.

**KEYWORDS:** drought; edible wild plants; Ethiopia; food shortage; poisoning.


**Abstract**

**Background:** Opportunistic intestinal parasitic infections cause severe diarrhoea especially in infants and in immunocompromised people worldwide.

**Objective:** The objective of this study was to assess and determine the prevalence of opportunistic intestinal parasites in paediatric patients with and without diarrhoea in selected hospitals in Addis Ababa.

**Methods:** A cross-sectional study was conducted on 222 children under five years of age who had diarrhoea and on 74 children who had no diarrhoea in selected Hospitals in Addis Ababa. Single stool specimens were collected and screened for intestinal parasitic infections by using direct and concentrated methods. The Modified Ziehl-Neelsen Staining and Modified Water-Ether Sedimentation methods were used for detecting Coccidial parasites.

**Results:** Of the 222 paediatric diarrheal patients, 61(27.5%) were found to be infected with a variety of intestinal parasites and out of 74 children without diarrhoea 11(14.9%) were found to be infected. Among the emerging opportunistic parasites detected in diarrheal children were Cryptosporidium parvum (8.1%), Isospora belli (2.3%) and Enterocytozoon bieneusi/Encephalitozoon intestinalis (0.5%). Other common intestinal parasites detected were Ascaris lumbricoides (0.5%), Trichuris trichiura (0.9%), Giardia lamblia (6.3%), Entamoeba histolytica/ E. dispar (1.4%), Blastocystis hominis (5.9%) and Hymnolepis nana (0.5%). Opportunistic parasites were found to be significantly associated with diarrheal and non-breastfed children (p<0.001). C. parvum and I. belli respectively were isolated from 83.3% and 80% of diarrheal children aged less than 12 months. C. parvum and I. belli infections were also higher in male children, with a prevalence of 72.2% for C. parvum and 80% for I. belli.
Conclusion: This study re-affirms and confirms the previously held view that opportunistic parasites can cause diarrhoea in paediatric patients and that it is more prevalent in male, non-breastfed children. The cause of diarrhoea in paediatrics in the absence of identifiable parasitic infections suggests that other infectious agents might be responsible for the diarrhoea.


Abstract
Although Ethiopia is one of the countries worst affected by human onchocerciasis, the exact taxonomic identity of the black flies acting as the main vectors in the endemic areas has never been determined. A cytotaxonomic analysis of Simulium damnosum s.l. collected from three endemic sites in south-western Ethiopia has now revealed the existence of the ‘Kisiwani’ from (a non-anthropophilic cytoform that is common in East Africa) and newly recognized specious, Simulium kaffaense. Simulium kaffaense sp. nov. is differentiated from other members of the S. damnosum complex by six fixed inversions and dozens of ‘new’ floating inversions. The rearing of egg batches from some of the biting adult females, to larvae or adults, indicated that the human biting black flies were all S. kaffaense. As S. kaffaense is not only highly anthropophilic but also, apparently, the only anthropophilic member of the S. damnosum complex present, it is likely to be the main (if not the only) vector of onchocerca volvulus in the study area. The presence of inversion 1S-1 and a complex inversion possibly involving 1L-3 indicates that S. kaffaense either belongs or is close to the ‘Nile’ phylogenetic group of S. damnosum s.l. The karyotype frequencies of the inversions in the collections from the three study sites indicate that at least two forms of S. kaffaense, here designated ‘Bebeka’ and ‘Jimma’, were caught. The taxonomy and medical importance of S. kaffaense are discussed.


Abstract
Background: The development of resistance by P. falciparum to most drugs used in prophylaxis and therapeutics underscores the need to investigate the sensitivity of local parasite isolates to the currently available standard antimalarial drugs.
Objective: To assess parasitological resistance and therapeutic efficacy of mefloquine (MQ) and sulfadoxine/pyrimethamine (SP) in children with uncomplicated falciparum malaria in Metehara town, southeast Ethiopia.
Methods: The therapeutic responses to MQ and SP were examined using the World Health Organization 14-day in vivo test protocol. A total of 119 children that fulfilled the inclusion criteria were assigned to the MQ (n=59) or SP (n=50) treatment group. The patients were followed up for 14 days, and clinical and parasitological outcomes were assessed.

Results: The 14-day clinical and parasitological cure rates in children treated with MQ were found to be 100% (55/55) with no recrudescence until day 14. In the SP group, the clinical cure and failure rates were found to be 78.9% (45/57) and 12% (7/57) respectively. Out of the patients with clinical failure in the SP group, one child was classified as early treatment failure and six had late treatment failure. The incidence of parasitological resistance was 21.1% (8 patients with RI and, 4 patients with RII). MQ was faster in fever and parasite clearance rate by day 2 (76.4%) and day 3 (98.2%) than in the SP group (64.9% day 2 and 91.2% day 3). Gametocyte carrier rate following therapy was significantly lower in those treated with MQ than in those receiving SP; 1.8% with MQ had gametocytes by day 14 compared to 50.9% with SP (P= < 0.001). Adverse events to both drugs were mild and a few with no incidence of characteristics of MQ and SP induced psychosis or Steven Johnson, respectively.

Conclusion: These findings show that MQ (15mg base/kg), administered as a single oral dose, was highly effective and well tolerated in the treatment of uncomplicated falciparum malaria achieving a cure rate of 100% of treated children in this endemic area. However, a dramatic increase in the frequency of parasite resistance to SP be demonstrated compared with the incidence two years previously.


**Abstract**

A total of 105 single fresh stool samples were collected from diarrheal patients with (80 HIV-positive and 25 HIV-negative) from the Army and the Police hospitals, Addis Ababa. The stool samples were processed by water-ether sedimentation method; they were stained with Uvitex-2B technique for microscopic detection of intestinal microsporidium. A portion of all samples were preserved in 200microl PBS containing 2% PVPP (Polyvinylpolpyrrolidone) for confirmation with PCR. 18/105(17.2%) of the cases were positive for intestinal microsporidial infection by at least one method. 8/105 (7.6%) positive both by microscopy and PCR and 10/105 (9.5%) were positive only by PCR. All microsporidia positive cases were also HIV positive. Based on PCR analysis, 15 Enterocytozoon bieneusi and 3 Encephalitozoon intestinalis were identified. This study has shown that intestinal microsporidiosis is a common cause of chronic diarrhoea in advanced AIDS patients and this is mainly attributed to
Enterocytozoon bieneusi. To the best of our knowledge, this is the first report of intestinal microsporidiosis in Ethiopia. It has an important implication for the understanding of the etiology of diarrhoea in HIV/AIDS patients in the country.


Abstract
Forty-nine samples with known C2V3 sequences were used for the evaluation of an env-based molecular beacon assay to distinguish between the two genetic subclusters C and C' which characterize the HIV-1 epidemic in Ethiopia. Two subcluster C and two subcluster C' beacons targeting two different loci in the C2V3 region were developed. Using a three beacon-based (2C and 1C'=C prime), isothermal amplification assay, concordance with DNA sequencing was achieved for 43 (87.8%) samples. Sensitivity was 81.8% and specificity 97.4% for subcluster C beacons. For the subcluster C’ beacon, a sensitivity of 97% and a specificity of 87.5% was achieved. Five samples were ambiguous by sequencing of which two samples were subcluster C’ by the beacon assay and one subcluster C. Two of the samples remained ambiguous with different beacon-pair combinations as well. From samples with a clear C or C' phylogeny by sequencing, three were undetected by the first-line beacon genotyping assay. Genotype ambiguity was resolved in the three samples using beacon pair combinations restricted to each targeted locus. The beacons were evaluated further in a panel including all HIV-1 subtypes. Four of five subtype C isolates were identified correctly, and no cross-reactivity was observed with other subtypes.


Abstract
The study was conducted to determine the prevalence, incidence, and risk factors for HIV infection among factory workers at two sites in Ethiopia. During February 1997-December 2001, a structured questionnaire was used for obtaining information on socio demographics, sexual behavior, and reported sexually transmitted infections (STIs) from a cohort of 1679 individuals. Serum samples were screened for antibodies against HIV, Treponema pallidum haemaglutination (TPHA), and herpes simplex virus type 2 (HSV-2). The overall baseline prevalence of HIV was 9.4%-8.5% among males and 12.4% among females. For both the sexes, the factors independently associated with an increased risk of HIV infection were widowhood and having had antibodies against TPHA and HSV-2.
The risk factors specific for males were being orthodox Christian, having had a higher lifetime number of sexual partners, and genital discharge in the past five years. The risk factors for females, included low income, one or more rape(s) over lifetime, and casual sex in the last year. The overall incidence of HIV infection was 0.4 per 100 person-years. The highest rate of incidence was observed among young women aged less than 30 years (1 per 100 person-years). The study confirmed that high-risk sexual behavior and STIs play major roles in the spread of HIV infection in the Ethiopians of both the sexes, but the factors, such as rape and low economic status, make women more vulnerable than men.

2006
Abstract
This study examines the possible association between the stimulant khat and risky sexual behavior that might aggravate the spread of HIV. A community-based cross-sectional survey and focus group discussions were conducted in the Southern People's and Oromia regional States of Ethiopia in 2004 involving 4,000 individuals to assess the attitudes and perceptions of an Ethiopian population towards the habit of khat-chewing and its possible association with risky sexual behavior. All participants in the focus group discussions and 38 percent of the survey respondents were of the opinion that behaviors associated with the mild narcotic effects of khat are conducive to casual sex, and hence constitute an increased risk for contracting and spreading HIV. A significant shift towards casual sex practices was observed in response to the effects induced by the substance, and a strong association was observed between khat-chewing, indulgence in alcohol and recourse to risky sexual behavior. There was no significant difference in the use or non-use of condoms among those male chewers who admitted resorting to casual sex after khat-chewing. The authors suggest that HIV/AIDS programmes in certain regions should address the habitual use of khat and other substances of potential abuse as part of their intervention efforts to curb the AIDS epidemic.
Key words: Alcohol, Amphetamine, Cathinone, Drug use, Khat, Psychotropic drugs.

Abstract
The man-biting behavior and Plasmodium infection rates of anopheline mosquitoes were investigated in Sille, a hyper endemic malarious area in southern Ethiopia. Seven Anopheles species were identified from all night landing collections, conducted from 18:00 to 06:00h between October 2001 and August 2002. The predominant species was Anopheles arabiensis (55.8%), followed by
Anopheles coustani (31.5%), Anopheles pharoensis (9.5%), Anopheles funestus (2.2%), Anopheles nili (0.5%), Anopheles marshallii (0.4%) and Anopheles demeilloni (0.2%). Dissection of A. arabiensis showed an average parous rate of 73.2%. A large proportion of the parous mosquitoes were caught biting in the latter part of the night. Malaria sporozoite rates were determined by ELISA for A. arabiensis, with 0.5% (4/796) infective with Plasmodium falciparum and 1.76% (14/796) with Plasmodium vivax; there were no mixed infections. From our small sample of sporozoite positives we found no association between biting behavior and sporozoite infection status.


Abstract

*Solanum incanum* L. (Solanaceae) is an annual herb that is used in the traditional medicine of Ethiopia for treating stomach and intestinal disorders. The spasmolytic activity of aqueous root extract of *S. incanum* was assessed on contractions of isolated guinea-pig ileum, induced by acetyl chloride, and compared with the effect of atropine. The aqueous root extract of *S. incanum* inhibited the response to acetyl chloride in a concentration-dependent manner (EC$_{50}$ = 0.215 mg/ml) similar to atropine which indicates that the extracts is a relaxant of guinea-pig isolated ileum. In addition to its antispasmodic activity in vitro, the extract inhibited charcoal travel in mice intestine by 36.28, 51.45, 52.93 and 38.53 percent in doses of 50, 100, 200, and 400 mg/kg body weight respectively. As the inhibition of contractile activity of the ileum is the base of the treatment of some gastrointestinal disorders such as colic, *S. incanum* may have clinical benefits for treatments of these conditions. Phytochemical screening of the root of the plant revealed the presence of alkaloids, saponons, tannins and flavonoids. The alkaloids in the plant might be responsible for the anti-colinergic activates observed. Results of acute toxicity study showed that the mice did not show any sign of conventional toxicity when administered doses of up to 15000 mg/kg body weight orally.

Key words: Anti-spasmodic, crude extract, *solanum incanum*


Abstract

To investigate whether low CD4+ T-cell counts in healthy and human immunodeficiency virus (HIV)-infected Ethiopians influence tuberculosis (TB) immunological memory, tuberculin skin test (TST) conversion and reactivity rates were investigated among adults with and without HIV infection in urban settings in Ethiopia. Reaction to the TST was analyzed with purified protein derivative by
the Mantoux technique. A total of 1,286 individuals with TST results of > or = 5-mm (n = 851) and < or = 4-mm (n = 435) indurations diameters were included. Individuals with < or = 4-mm indurations sizes were followed up for 21.4 +/- 9.5 months (mean +/- standard deviation) to observe skin test conversion. The overall TST reactivity (> or = 5-mm indurations diameter) was 66.2% (n = 851). Reactivity was significantly lower among HIV-positive persons (40.5%) than among HIV-negative persons (68.7%) (P < 0.001). Of the above persons, 32 incident TB patients were checked for their TST status 13.05 +/- 11.1 months before diagnosis and reactivity was found among 22 (68.7%) of them. Of the TST-negative persons with 0- to 4-mm indurations who were followed up for 3 years, the conversion rate to positivity was 17.9/100 person-years of observation (PYO) (14.4/100 PYO and 18.3/100 PYO in HIV-positive and -negative persons, respectively). Despite lower absolute CD4+ T-cell numbers in Ethiopians, higher TST conversion and reactivity rates show the presence of a higher rate of latent TB infection and/or transmission. The lower TST positivity rate before a diagnosis of TB disease showed the lower sensitivity of the test. This indicates the need for other sensitive and specific diagnostic and screening methods to detect TB infection, particularly among HIV-positive persons, so that they can be given prophylactic isoniazid therapy.


Abstract

OBJECTIVE: This study aims at investigating the in vivo anti-plasmodial activity of a traditionally used medicinal plant, Withania somnifera, L. Dunal, (Solanaceae).

METHODS: Rodent malaria parasite, Plasmodium berghei, 0.2 ml of x 10(7) parasites, was inoculated into Swiss albino mice intraperitoneally. Extracts were administered by intra gastric tube daily for four days starting from the day of parasite inoculation. Negative controls received the same amount of solvent used to suspend the extracts and the positive controls were given chloroquine by the same route. Parasite suppressive effect and effects on body weight, packed cell volume (PCV) and body temperature were determined.

RESULTS: Parasitemia percent inhibition of W. somnifera roots and root barks were 50.43% and 29.13% respectively, with 600 mg/kg dose. Inhibition was statistically significant at all dose levels, compared to the negative controls (p < 0.05), and maximum inhibition was seen at 600 mg/kg.

CONCLUSION: Extracts of the leaves and root barks of W. somnifera showed parasite suppressive effect and a protective effect on PCV drop (at higher doses), both in dose-related fashions. However, the effects on body weight and body temperature falls are inconclusive.

In vivo anti-malarial activity of hydroalcoholic extracts from asparagus africanus Lam. in mice infected with plasmodium berghei. Ethiop J. Health Dev. 2006; 20(2); 112-118.

Abstract
Background: Malaria is a major public health problem in the world in general and developing countries in particular, causing an estimated 1-2 million deaths per year, an annual incidence of 300-500 million clinical cases and more than 2 billion people are at risk of infection from it. But it is also becoming more difficult to treat malaria due to the increasing drug resistance. Therefore, the need for alternative drugs is acute.

Objective: This study aims at investigating the in vivo antiplasmodial activity of extracts of the roots and aerial parts from traditionally used medicinal plant, named Asparagus africanus (Liliaceae).

Methods: A rodent malaria parasite, Plasmodium berghei, which was maintained at the Ethiopian Health and Nutrition Research Institute (EHNRI) laboratory, was inoculated into Swiss albino mice. The mice were infected with 1 x 10^7 parasites intraperitoneally. The extracts were administered by an intra gastric tube daily for four days starting from the day of parasite inoculation. The control groups received the same amount of solvent (vehicle) used to suspend each dose of the herbal drug. Chloroquine was used as a standard drug, and was administered through the same route.

Results: Extracts from the roots and aerial parts of A. africanus were observed to inhibit Plasmodium berghei parasitaemia in the Swiss albino mice by 46.1% and 40.7% respectively.

Conclusion: The study could partly confirm the claim in Ethiopian traditional medicine that the plant has therapeutic values in human malaria. There is, thus, the need to initiate further in-depth investigation by using different experimental models.


Abstract
We investigated the absolute counts of CD4+, CD8+, B, NK, and CD3+ cells and total lymphocytes in patients with acute Plasmodium falciparum and Plasmodium vivax malaria. Three-color flow cytometry was used for enumerating the immune cells. After slide smears were stained with 3% Giemsa stain, parasite species were detected using light microscopy. Data were analyzed using STATA and SPSS software. A total of 204 adults of both sexes (age, >15 years) were included in the study. One hundred fifty-eight were acute malaria patients, of whom 79 (50%) were infected with P. falciparum, 76 (48.1%) were infected with P. vivax, and 3 (1.9%) were infected with both malaria parasites. The remaining 46 subjects were healthy controls. The leukocyte count in P. falciparum patients was lower than that in controls (P=0.015). Absolute counts of CD4+, CD8+, B, and CD3+ cells and total lymphocytes were decreased very significantly during both P. falciparum
(P<0.0001) and P. vivax (P<0.0001) infections. However, the NK cell count was an exception in that it was not affected by either P. falciparum or P. vivax malaria. No difference was found in the percentages of CD4, CD8, and CD3 cells in P. falciparum or P. vivax patients compared to controls. In summary, acute malaria infection causes a depletion of lymphocyte populations in the peripheral blood. Thus, special steps should be taken in dealing with malaria patients, including enumeration of peripheral lymphocyte cells for diagnostic purposes and research on peripheral blood to evaluate the immune status of patients.


Abstract
The present study monitored the changes in human immunodeficiency virus (HIV) viral load using a reverse transcriptase (RT) assay and an HIV-1 RNA based assay, and relates these data to the dynamics of CD4 cell counts. The samples examined originate from a prospective study of HIV-1 subtype C infected, untreated Ethiopians followed twice yearly over a period of up to 5 years. The ExaVir Load test, version 1, was used for isolation and quantitation of HIV-1 RT in plasma. The RT activities recovered were compared to the HIV-1 RNA copy numbers, which had been determined previously by the NucliSens HIV-1 QT Test. There was a significant correlation between the data obtained in the two tests (r = 0.65, P < 0.0001). During follow-up, the median RT and RNA levels increased more or less in parallel up to approximately four times the values at admittance. CD4 cell counts, which had also been determined previously, decreased slowly but continuously from approximately 310 to 190 CD4 cells/ml. In the majority of individual patients, there was an inverse correlation between CD4 T-cell counts and RT activity, and with the RNA copy number, and the data obtained by either test could be used to predict CD4 T-cell counts. The ExaVir Load test thus provides data equivalent to the estimation of the number of HIV-1 RNA copies for the prediction of CD4 T-cell counts. It is based on a simple technique, can be run in any routine diagnostic laboratory, and is a competitive alternative for use in resource limited settings.


Abstract
OBJECTIVE: Brucellosis is a Zoonosis, recognized worldwide as a serious public health hazard and economically significant disease. The etiologic agent of this disease is a bacterial species of the genus Brucella that causes undulant fever, sterility and other systemic illnesses in human. Thus, the aim of this study was to
undertake seroepidemiological study of brucellosis on occupationally exposed persons in Addis Ababa abattoirs enterprise and different dairy farms.

**METHODS:** Three hundred thirty-six human individuals were screened using Rose Bengal Plate Test (RBPT) and the sera were further subjected to 2-Mercapto Ethanol Test (2-MET). Simultaneously, survey was conducted in farms and slaughterhouse to investigate epidemiological factors.

**RESULTS:** An overall seroprevalence rate of 4.8% (16/336) was determined by taking RBPT+/2MET+ as confirmatory test (P < 0.05). Some of the risk factors contributing to the occurrence of the disease include occupation, gender, and unsafe handling of infected materials. Raw milk and meat consumption, lack of awareness and use of detergents were also found as important factors.

**CONCLUSION:** The seroprevalence of brucellosis is expected to be more in other areas of the Region, where there is high human-animal contact and high number of cattle population with a respective traditional system of animal rearing.

340. **Mohammedberhan Abdulwaheb, Eyasu Makonnen and Asfaw Debella.**


**Abstract**

Khat chewing is a widespread habit that has a deep-rooted socio-cultural tradition in East Africa and in the Middle East. Although a number of investigations have been carried out using cathinone, the psychoactive component of khat, these may not wholly reflect the behavioral effects observed after administering khat in a dosage similar to those used traditionally. The aim of the present study was to evaluate the effect of sub-chronically administered khat extract with or without alcohol on sexual behavior in female rats. Adult albino female rats were administered either with khat extracts (100, 200, 400mg/Kg), amphetamine (1mg/Kg), ethanol (2, 10%), or a combination of khat and ethanol (2%+10%) by intra-gastric gavage orally for 15 days. Both (200, 400mg/Kg) doses of khat extract treated female rats demonstrated a statistically significant decrease in both receptivity and proceptivity behavior. Although low dose of the extract increased female sexual behavior, it was not statistically significant. Similar results were obtained when khat extract (200mg/Kg) followed after 30 minutes by ethanol (10%) was administered despite the inhibitory effect observed when each drug was administered alone. From the present study it can concluded that higher doses of the extract inhibit sexual behavior in female rats.

**Key words:** Khat, sexual parameters, sexual behavior, Ethanol extract.

341. **Shimelis Tizazu, Kelbessa Urga, Ashenafi Tadele, Negero Gemeda, Ashenafi Assefa, Hirut Lemma.**


**Abstract**

Evaluation of antimicrobial activity of semisolid formulations of trachyspermum ammi and cymbopogon citrates essential oil against five common strains of pathogenic fungi was carried out using the agar well diffusion method. The
results indicated that 1% v/w of T. ammi and C. citrates oils prepared in some basis exhibited remarkable antifungal activity with zone inhibition diameters greater than those for standard antifungal agents. The growth of all five fungal strains was inhibited when T. ammi oil and C. citrates oil were formulated separately in macrogel blend ointment or hydrophilic ointment base. The properties of base in to which the oil was incorporated affected its activity. The hydrophilic formulation exhibited higher antifungal activities compared to their lipophilic counterparts and all the formulations were intended for tropical use.

Key words: Agar well diffusion, antifungal activity, essential oils, semisolid formulation, zone of inhibition.

342. Solomonn Mequanente, Eyasu Makonnen and Asfaw Debella. Gastric acid Antisecretory and acid neutralization effect of Aqueous TRIGONELLA FEONUM-
GRACUM and LINUM USSITATISSIMUM Seed extracts on experimental models.

Abstract

The majority of the Ethiopian population relies on traditional remedies such as barley and fenugreek infusion, and linseed mucilage to manage peptic ulcer. Previous studies showed that both Trigonella foenum-gracum and Linum usitatissimum seeds have anti-ulcer effect. How anti-ulcer effect is mediated, however, has not well been established. The aim of this study is, therefore, to screen the aqueous extract of T. foenum-gracum and L. usitatissimum seeds for their anti-secretory and antacid action in an attempt to come up with the possible mechanisms. The present study revealed that T. foenum-gracum extract significantly reduced the basal total acid (P< 0.05) while L. usitatissimum extract slightly reduced it. Both aqueous extract of T. foenum-gracum and L. usitatissimum seeds neutralized the acid in vitro. L. usitatissimum extract was observed to have a higher acid neutralizing capacity than T. foenum-gracum extract. From this study it can be concluded that the aqueous extract of T. foenum-gracum seeds may produce anti-ulcer effect through acid antisecretory and acid neutralizing action while that of L usitatissimum lonely through acid neutralizing action. To establish this, further investigation at molecular mechanism should be pursed.

Key words: T. foenum-gracum, L. usitatissimum, linseed, fenugreek, anti-
secretory, antacid.


Abstract

The majority of population relies on traditional remedies and some of which may also have nutritional value. Trigonella foenum-gracum infusion and Linum usitatissimum water extracts are used to manage peptic ulcer. This traditional practice supplements the modern medicine and fills the gap where the latter appereos to be inadequate, ineffective or costly. However, the safety and efficacy of these remedies are not well known. The aim of this study, therefore to screen the aqueous extracts of T:foenum-gracum and L.usitatissimum seeds for their anti-
ulcer activity with the acute toxicity evaluation. The results indicated that both aqueous T.foenum-gracum and L.usitatissimum seed extracts reduced the ulcer index and ulcer number of ethanol induced lesions (p<0.001). The extracts showed dose dependent anti-ulcer activity. Similarly, T.foenum-gracum and L.usitatissimum extracts protected the idomethacin-induced gastric mucosal damage dose dependently. Per oral LD50 of both extracts was greater than 2000mg/kg whereas the entraperitoneal LD50 of the aqueous extract of T.foenum-gracum and L.usitatissimum seeds were found to be 4677.4 and 1698.2 mg/kg, respectively. From the present study it can be concluded that the aqueous extracts of T.foenum-gracum and L.usitatissimum have anti-ulcer effect supporting their claimed traditional use. They also appear safe at the anti-ulcer doses. However, further studies are required before the extracts are used as medicine.

Key words: Trigonella, T.foenum-gracum, L.usitatissimum, Linseed, Fenugreek, Indomethacin, Alcohol


Abstract

Intestinal microsporidiosis is most commonly associated with persistent diarrhea in advanced AIDS cases. To determine the prevalence and clinical manifestations of this infection in HIV/AIDS patients, a single fresh stool sample and blood were collected from 243 (214 HIV-positive and 29 HIV-negative) diarrheal patients. The presence of intestinal microsporidiosis in the stool was determined by Uvitex-2B staining and a PCR-based detection method. HIV screening was done by using ELISA, and reactive samples were confirmed by Western blotting. The CD4+ cell count was analyzed using FACScan. Out of 243 diarrheal patients, 39 (16.0%) cases were positive for intestinal microsporidial infection by either of the methods used. Of the 39, only 18 cases positive by microscopy were also positive by PCR. Based on PCR and microscopic analyses the microsporidial parasites were identified as Enterocytozoon bieneusi (30), Ecephalitozoon intestinalis (6), and double infections (3). All microsporidia-positive cases were HIV-positive, and 92.3% had diarrhea for over 4 weeks. The diarrhea was watery in 79.5% of the patients. Weight loss >10% was recorded in 37 (94.9%) cases. The CD4+ cell count was <100 cells/mm(3) in 84.4% of subjects, and 59.4% of the patients had a CD4+ cell count of < or =50 cells/mm(3), with a mean of 22.8 cells/mm(3). This study revealed that intestinal microsporidiosis is a common cause of chronic diarrhea and severe weight loss in advanced AIDS patients in Ethiopia. This condition is attributable mainly to E. bieneusi. Thus, early diagnosis of intestinal microsporidiosis in HIV/AIDS patients would certainly be helpful in the understanding and management of diarrheal illness.


Abstract

Background: The pathogenic potential of the parasite Blastocystis hominis is often considered controversial. However, it is now gaining acceptance as a human intestinal parasitic agent showing different clinical symptoms.

Objective: To determine the prevalence and related clinical manifestation of B. hominis infection in patients referred for bacteriological stool culture at the Ethiopian Health & Nutrition Research Institute (EHNRI).

Methods: A total of 152 patients referred for bacteriological stool culture to the bacteriology and parasitology labs at EHNRI were examined for possible infection with B. hominis. A single stool sample from each individual was collected and processed for isolation of bacteria by using a standard culture method for enteric bacteria, while direct and for mol-ether concentration methods were used for the detection of ova and parasites; and the Modified Ziehl Neelsen method was applied for Cryptosporidium parvum and Isospora belli and water-ether sedimentation with Uvitex-2B staining method was used for detecting intestinal microsporidia. Clinical information was recorded during stool sample collection.

Results: One Salmonella spp., two Shigella spp. and one case of Escherichia coli were isolated. Blastocystis hominis was detected in 71(46.7%) of the 152 patients examined and 51/71(71.8%) of the patients were found to have been infected with B. hominis alone. Well known opportunistic intestinal parasites - Cryptosporidium parvum 11(7.2%), Isospora belli 13 (8.6%) and Enterocytozoon bieneusi 2 (1.3%) - were also recorded. Among the helminths, Strongyloides stercoralis 5 (3.3%) was identified to be the most prevalent. The most common clinical symptoms significantly associated with B. hominis were distension, flatulence and anorexia (P<0.05). Among the positive cases, four staff members (three males aged 38, 40 and 45 years old and one female aged 42 years old) who were infected with B. hominis alone were treated with metronidazole 250 mg, 2 tablets three times a day for 10 days, and responded favourably and all clinical symptoms resolved.

Conclusions: This information is expected to strengthen the newly emerging perception on the pathogenic potential of B. hominis infection. It will also create an awareness of laboratory technicians and physicians for proper diagnosis and management of the disease. From this and other related studies conducted elsewhere, it could be concluded that treating B. hominis infections where defined symptoms are presented with large numbers of parasites in the stool and in the absence of other cases of the disease is recommendable.


Abstract
Schistosomiasis infection is on the rise in Ethiopia, affecting a substantial portion of the productive force. The transmission and life cycle of the schistosome parasite is effected between the mulluscan intermediate host and the definitive host, i.e. man. Medicinal plants with molluscidal properties have paramount importance for the local control of snails. This study was focused on the preliminary phytochemical and laboratory investigation of the molluscidal properties as well as evaluation of the acute toxicity of the aqueous extracts of 19 different molluscidal plants belonging to 23 families on mice. The effect of the aqueous extracts of 19 molluscidal plants on experimental snails, *Biomphalaria pfeifferi*, *Bulinus* sp. and *physa acuta*, were evaluated. Portions of the same extracts were used for the identification of the major class of secondary metabolites. Determination of the LD$_{50}$ of the extracts also carried out. Out of the tested plant extracts belonging to these plant families, four plants, viz., *Albizia gummifera*, *Balanites aegypytica*, *Hedera helix* and *warbrugia ugandensis* exhibited promising molluscidal activates against *Biomphalaria pfeifferi*, *Bulinus* sp. and *physa acuta*. The chemical profile of the crude aqueous extracts showed the presence of some secondary metabolites viz., polyphenols, alkaloids, tannins, saponins and glycosides. Acute toxicity studies of the promising plant on mice showed medium lethal dose (LD$_{50}$) values ranges from 150 mg/kg to 450 mg/kg when the aqueous extracts were administered intraperitonealy. The crude extracts of the plants demonstrating stronger molluscicidal effect and safety on non-target organism stresses the need for extended laboratory and field evaluation, which could then be employed to play an important role in schistosomiasis control.

**Key words:** molluscicidal, medicinal plants, *Biomphalaria pfeifferi*, *Bulinus* sp., *physa acuta*.


**Abstract**

Twenty-eight outbreaks in six regions and two major cities in Ethiopia from 2000 to 2004 were investigated, with the collection of 207 venous blood and/or oral fluid samples. Measles diagnosis was confirmed by detection of measles-specific IgM and/or detection of measles virus by polymerase chain reaction (PCR). Of 176 suspected cases tested for specific measles IgM, 142 (81%) were IgM positive. Suspected cases in vaccinated children were much less likely to be laboratory confirmed than in unvaccinated children (42% vs. 83%, P < 0.0001). Of 197 samples analyzed by RT-PCR measles virus genome was detected in 84 (43%). A total of 58 wild-type measles viruses were characterized by nucleic acid sequence analysis of the nucleoprotein (N) and hemagglutinin (H) genes. Two recognized genotypes (D4 and B3) were identified. Each outbreak comprised only a single genotype and outbreaks of each genotype tended to occur in distinct geographical locations. B3 was first observed in 2002, and has now been the cause of three documented outbreaks near to the border of Sudan. D4 genotype was previously observed in an outbreak in 1999 and occurs in more diverse locations throughout the country. These data yield insights into geographical and
age-related sources of continued transmission. Refinement of measles control measures might include targeting older age groups (5-14 years) and strengthening routine immunization particularly where importation of cases is a concern.

**Key words:** Measles outbreaks, Serological and molecular investigation, Ethiopia


**Abstract**

In Ethiopia the control of fertility is based on the folk use of numerous traditional antifertility plants that has been practiced for many years. *Achyranthes aspera* is one of the plants that is used for this purpose. The efficacy and safety of many of such plants, however, have not been verified. The present study was conducted to carry out phytochemical, contraceptive efficacy on some indicators for antifertility activities and safety evaluations of crude extracts of *Achyranthes aspera*. The anti-fertility activity of the methanolic extract of the leaves of *Achyranthes aspera* was determined by the number of implantation sites in both horns of uterus and the number of litters after completion of one gestation period in rats. The effect of the extract on the length of estrous cycle and the weights of ovary and uterus/100g of body weight of the animal was also evaluated. Phytochemical screening revealed the presence of known anti-fertility principles such as phytosteroids, polyphenols and saponins. The methanolic leaf extract reduced significantly (p< 0.05) the number of litters and implantation sites in rats. The extract prolonged estrous cycle, estrous and metestrous phases (p < 0.05) of rats. The weight of ovary was reduced, but that of uterus was increased (p < 0.05). The oral LD50 of the extract was found to be 9.7 g/kg in mice. The present study hinted that the methanolic extract has anti-fertility effect and is safe at the contraceptive doses.

**Keywords:** Achyranthes aspera, anti-fertility, rats, Phytochemical screening, LD 50.


**Abstract**

**Background:** The practice of traditional medicine for the control of fertility in rural Ethiopia is based on folk use of numerous anti-fertility herbs and Achyranthes aspera is one of these used for this purpose. Many plants are known to possess anti-fertility effect through their action on hypothalamo-pituitary-gonadal axis or direct hormonal effects on reproductive organs resulting in inhibition of ovarian steroidogenesis.

**Objective:** The present study focused to investigate the effect of methanolic leaves extract of Achyranthes aspera L. on some indicators for anti-fertility
activities such as abortifacient, estrogenicity, pituitary weight, and ovarian hormone level and lipids profile in female rats, in attempt to validate the traditional claim.

**Methods:** The abortifacient effect of the methanolic extract of the leaves of Achyranthes aspera was determined by counting the dead fetuses in vivo. Effect on estrogenicity was assessed by taking the ratio of the uterine weight to body weight. The ratio of the pituitary weight to body weight was also calculated. The effect of the extract on the level of ovarian hormones and lipid profile was evaluated using electro-chemiluminescence immunoassay.

**Results:** The extract showed significant (p<0.05) abortifacient activity and increased pituitary and uterine wet weights in ovariectomized rats. The extract, however, did not significantly influence serum concentration of the ovarian hormones and various lipids except lowering HDL at doses tested.

**Conclusion:** The methanolic leaves extract of Achyranthes aspera possesses anti-fertility activity, which might be exploited to prevent unwanted pregnancy and control the ever-increasing population explosion.

**Key words:** achyranthes aspera, Female rats, Hormones, Lipids.

---

**2007**


**Abstract**

Vector borne diseases are among the major causes of illness and death in many developing countries affecting substantial portion of the productive force. Medicinal plants with larvicidal properties have paramount importance for the local control of mosquito. This study was therefore focused on the phytochemical screening and laboratory investigation of the larvicidal properties of the aqueous extracts of 33 medicinal plants belonging to 27 families. The effects of aqueous extracts of 33 plants on laboratory reared *Aedes aegypti*, *Aedes africanus* and *Culex quinquefasciatus* were evaluated using the standard WHO protocol. Portions of the same extracts were used for the identification of the major classes of secondary metabolites. Determination of the LD50 of the most active plants extracts was also carried out on mice. Out of the tested 33 plants extracts, five plants, viz., *Albizia gummifera* (seeds), *Balanites aegyptica* (fruits), *Hedera helix* (leaves and fruits), *Millettia ferruginea* (seeds) and *warburgia ugandensis* (leaves) exhibited promising larvicidal activities against *Aedes aegypti*, *Aedes africanus*, and *Culex quinquefasciatus*, respectively. Acute toxicity studies of these plants on mice showed medium lethal dose (LD50) values ranges from 150 mg/kg to 450 mg/kg when the aqueous extracts were administered intraperitonealy. Phytochemical investigation of the aqueous extracts used for the test revealed the presence of saponins, polyphenols, alkaloids and glycosides as major classes of compounds in most of the plants. The crude extracts of these plants demonstrating stronger larvicidal effect and safety on non-target organism stresses the need for extended laboratory and field evaluation, which could then be employed to play an important role in the control of the larvae of the vectors at their breeding site.
Key words: larvicidal, medicinal plants, Aedes aegypti, Aedes africanus, Culex quinquefasciatus


Abstract

Background: Malaria constitutes one of the major health problems in Ethiopia. One of the reasons attributed for the upsurge was the development of resistance of plasmodium faciparum and the emergence of multi-resistant strains of the parasite to antimalarial drugs. A continued search for other effective, safe and cheap plant-based antimalarial agents thus becomes imperative in the face these difficulties. The objective of the present study was therefore to evaluate in vivo antimalarial activities and acute toxicity profiles of the aqueous and methanolic extracts of nine medicinal plants.

Methods: Nine plants which are commonly used for the treatment of malaria in the community were identified. The nine medicinal plants specious Cissampelos mucronata, Clerodendrum myricoides, Gnidia stenophylla, Vernonia bipontiti, Euclea scimperi, solanum incanum, plumbago zylanica, Warburiga ugandensis and kalanchoe petitiana were evaluated for their antimalaria activity in vivo, in 4-day suppressive assesies against plasmodium burghei anka strain in mice.

Result: no toxic effect or mortality was observed in mice treated orally with any of the extracts as a single dose of 1000 mg/kg/day. At oral doses of 400 mg/kg/day, the lyophilized aqueous root extract of Gnidia stenophylla, leaf extract of Vernonia bipontini, root extract of Euclea scimperi, cissampelos mucronata, and clerodendrum myricoides and methanolic leaf extract of Vernonia bipontini presented relatively high activities, among which three extracts reduced parasitemia by > 50% when tested at an oral dose of 400 mg/kg/day indicating that the plants are promising for further investigation.

Conclusion: The results justify the use of these plants as traditional medicines for the treatment of malaria. Except the leaf extract of Cissampelos mucronata, the methanol extract of Clerodendrum myricoides and aqueous extract of Kalanchoe petitiana have inhibition of parasitemia above 10%. Further detailed pharmacological and toxicological studies are recommended for drug development.

Key words: malaria, medical plants, plasmodium berghei, traditional medicine.


Abstract
Knowledge of the most dominant T-cell epitopes in the context of the local human leukocyte antigen (HLA) background is a prerequisite for the development of an effective HIV vaccine. In 100 Ethiopian subjects, 16 different HLA-A, 23 HLA-B, and 12 HLA-C specificities were observed. Ninety-four percent of the population carried at least 1 of the 5 most common HLA-A and/or HLA-B specificities. HIV-specific T-cell responses were measured in 48 HIV-infected Ethiopian subjects representing a wide range of ethnicities in Ethiopia using the interferon (IFN)-gamma enzyme-linked immunospot (Elispot) assay and 49 clade C-specific synthetic Gag peptides. Fifty-eight percent of the HIV-positive study subjects showed T-cell responses directed to 1 or more HIV Gag peptides. Most Gag-specific responses were directed against the subset of peptides spanning Gag p24. The breadth of response ranged from 1 to 9 peptides, with most (78%) individuals showing detectable responses to <3 Gag peptides. The magnitude of HIV-specific T-cell responses was not associated with HIV viral load but correlated positively with CD4 T-cell counts. The most frequently targeted Gag peptides overlapped with those previously described for HIV-1 subtype C-infected southern Africans, and therefore can be used in a multiethnic vaccine.


Abstract

We studied HIV-1 clade C Gag-specific T-cell responses in five HIV-infected Ethiopians with a relatively slow (< 15 cells/microl per year) and five with a fast (> 45 cells/microl per year) CD4 T-cell decline longitudinally. Six study subjects had T-cell responses directed to one or more HIV-1 Gag peptides. The persistence of strong and broad anti-Gag cytotoxic T-lymphocyte responses was associated with a slow rate of CD4 T-cell decline and with human leukocyte antigen alleles from the B27 supertype.


Abstract

Objective:-Evaluation and monitoring of Human Immunodeficiency Virus (HIV) testing reagents at the point of service is helpful to prevent the occurrence of problems related to testing and interpretation. To evaluate the implementation of HIV rapid test kits at the point of services in voluntarily counseling and testing (VCT) and diagnostic centers in Ethiopia.

Methods:-The assessment was the third phase of evaluation of HIV rapid test kits in Ethiopia followed from phase-I and phase-II. Known proficiency testing panels, well-structured questionnaire (addressing type of tests, human resource
and problems related to tests), onsite supervision and retesting of samples collected from sites were used to evaluate the performances of reagents and laboratories.

**Results:** Forty-four health institutions were included. Thirty-six (90.0%) health institutions had trained human resource on HIV testing. In 27 (61.4%) three types of HIV rapid test kits (Determine, Capillus and Unigold) were available. Serial-algorithm was used in all the laboratories. In 31 (70.4%) of them external quality control specimens were not used. Twenty two (50.0%) of the laboratories reported frequent shortage of reagents. All (100%) were able to identify negative specimens distributed. Positive proficiency panel samples were identified in 37 (94.8%) of the 39 laboratories. There was 98.3% agreement at a screening level between the sites and the central laboratory. Rate of discrepancy between screening and confirmatory assays was found to be 3.0% and 2.1% at the sites and at central laboratory, respectively.

**Conclusion:** The test kits showed a good performance at the point of services in the field sites. However, continuous assessment of HIV test kits at the point of service and training of professionals on newly arrived techniques are recommended to have effective testing performance with acceptable sensitive and specific testing algorithm. Effective quality assurance program should be in place to support programs such as VCT, prevention of mother-to-child-transmission and antiretroviral therapy.


**Abstract**

**Background:** Iodine-deficiency disorders are a major public health problem in Ethiopia. In conjunction with implementing control programs, baseline information needs to be established.

**Objective:** To investigate the distribution and degree of severity of iodine-deficiency disorders in terms of goiter prevalence, urinary iodine excretion (UIE) levels, and proportion of households with iodated salt in Ethiopia.

**Methods:** A nationwide, community-based, cross-sectional study was conducted from February to May 2005 among 10,965 children aged 6 to 12 years. A multistage, proportional-to population-size sampling method was used. Goiters were classified by the method recommended by the World Health Organization/UNICEF/International Council for the Control of Iodine Deficiency Disorders (WHO/UNICEF/ICCIDD), in which the thyroid gland is graded as 0 (normal), 1 (palpable goiter), or 2 (visible goiter); urinary iodine was determined by the wet digestion method; and salt samples were analyzed by a rapid test kit.

**Results:** The national total goiter weighted prevalence rate among children aged 6 to 12 years was 39.9% (95% confidence interval, 38.6% to 41.2%), representing more than 4 million children. The median UIE was 2.45 μg/ dL; 45.8% of children had UIE values of 2 μg/dL or less, and 22.8% had UIE values of 2.01 to 5.0 μg/dL. Only 4.2% of the households had iodated salt.
Conclusions: According to the WHO/UNICEF/ICCIDD classification, both goiter prevalence and UIE levels indicate that the whole country appears to be severely affected by iodine deficiency. Furthermore, the virtual absence of iodated salt in the households shows that currently there is no salt iodization program in the country. Dietary sources of iodine in Ethiopia are not dependable, and hence a sustainable universal salt iodization program needs to be implemented without delay.

Key words: Iodine deficiency, Iodated salt, Total goiter rate, Urinary iodine excretion


Abstract

Background: Iodine deficiency is severe public health problem in Ethiopia. Although urinary iodine excretion level (UIE) is a better indicator for IDD the goitre rate is commonly used to mark the public health significance. The range of ill effect of IDD is however beyond goitre in Ethiopia. In this study the prevalence of goitre and its association with reproductive failure, and the knowledge of women on Iodine Deficiency were investigated.

Methods: A cross-section community based study was conducted during February to May 2005 in 10998 women in child bearing age of 15 to 49 years. To assess the state of iodine deficiency in Ethiopia, a multistage "Proportional to Population Size" (PPS) sampling methods was used, and WHO/UNICEF/ICCIDD recommended method for goitre classification.

Results: Total goitre prevalence (weighted) was 35.8% (95% CI 34.5–37.1), 24.3% palpable and 11.5% visible goitre. This demonstrates that more than 6 million women were affected by goitre. Goitre prevalence in four regional states namely Southern Nation Nationalities and People (SNNP), Oromia, Bebshandul-Gumuz and Tigray was greater than 30%, an indication of severe iodine deficiency. In the rest of the regions except Gambella, the IDD situation was mild to moderate. According to WHO/UNICEF/ICCIDD this is a lucid indication that IDD is a major public health problem in Ethiopia. Women with goitre experience more pregnancy failure $\chi^2 = 16.5, p < 0.001; \text{OR} = 1.26, 1.12 < \text{OR} < 1.41$ than non goitrous women. Similarly reproductive failure in high goitre endemic areas was significantly higher $\chi^2 = 67.52; p < 0.001$ than in low. More than 90% of child bearing age women didn't know the cause of iodine deficiency and the importance of iodated salt.

Conclusion: Ethiopia is at risk of iodine deficiency disorders. The findings presented in this report emphasis on a sustainable iodine intervention program targeted at population particularly reproductive age women. Nutrition education along with Universal Salt Iodization program and iodized oil capsule distribution in some peripheries where iodine deficiency is severe is urgently required.

Abstract

*Adrachne aspera* spreng grows at an altitude of 1000 –2400m often in rock crevices. The roots of this plant are traditionally used in for various ailments. Despite its widespread use, this medicinal plant has not been subjected to pharmacological studies. It was the aim of the present study to evaluate the antinociceptive effect of the root extract. The 80% methanolic extract was dissolved in 2.5% v/v tween 80 in normal saline and the antinociceptive effect of different oral doses was assessed in the writhing, the tail flick and the hot plate tests in mice. The extract produced significant antinociception in all the tests as compared to the vehicle (2.5% tween 80 in normal saline (v/v)). The antinociception produced was dose-dependent in the tail flick test. The results of this work, therefore, support the claimed traditional use.

**Keywords:** *Andrachne aspera*, antinociception, hot plate, tail flick, writhing, methanol extract


Abstract

Ciprofloxacin is a fluoroquinolone derivative having a broader spectrum of antibacterial activity against Gram-negative and Gram-positive aerobic and anaerobic organisms. It is the drug of choice for treating urinary tract infections and enteric typhoid fever. Quality assurance and evaluation of antibiotics has paramount importance to monitor the distribution of counterfeit and substandard medicines in the drug retail outlets and ensure the desired therapeutic efficacy on susceptible microorganisms. This investigation was carried out to assess the quality of eight brands of ciprofloxacin 500 mg tablets marketed by different drug retail outlets in Addis Ababa. At the time of this sampling, most of the tablets had a shelf-life of at least two years and they were in their original packages. Identity, weight uniformity, disintegration and dissolution tests as well as assay for the content of active ingredients were performed using the methods described in the British Pharmacopoeia. Hardness and equivalence of drug release at t50% and t90% of the different brands of ciprofloxacin tablets were also evaluated and compared. All the samples passed the identity, disintegration, and dissolution tests. Among the eight brands, ciprokin® failed the weight uniformity test. Eight of the ciprofloxacin brands examined passed the assay for content of active ingredient and also assured the minimum requirement for the test in crushing strength of the tablets. The eight brands were found to be bio-in equivalent for their drug release compared at t50% and t90% indicating significant difference in the *in vitro* drug release.

**Keywords:** ciprofloxacin tablets, comparative study, *in vitro* quality evaluation, physicochemical parameters
Abstract

Background: Medicinal plants are natural resources, yielding valuable herbal products, which are often used in the treatment of various ailments. The barak of psudium guajava Linn is used for treatment of intestinal diseases such as diarroea, dysentery, stomach ache, cramps and abdominal distention as well as skin diseases. The present investigation was made to evaluate the antibacterial and antifungal activity of leaves of psudium guajava.

Methods: Eighty percent ethanolic leaf extract of psudium guajava was screened for antimicrobial activity against different strain of bacteria and fungi. The microorganism that were included in the test were staphylococcus aureus ATCC 6538, klebsiella pneumonia ATCC 13883, Escherichia coli ATCC 25922, Pseudomonas aeroginosa ATCC 27855, Trichophyton mentagrophytes ATCC 18748, Aspergillus flavus ATCC 13697, Aspergillus niger ATCC 10535 and clinical isolates of staphylococcus aurens, klebsiella pneumonia, esherichia coli, pseudomonas aeroginosa, streptococcus pneumonia, staphylococcus pyogenes, shigella dysentriae, salmonella typhi, candida albicans, Cryptococcus neoformans, aspergillus flavus, aspergillus niger, tricophyton violanceum and microsporun canis. The test were carried out using agar dilution method at different concentration levels of crude extract (0.25, 0.5, 0.75, 1.0, 1.5 mg/ml for antibacterial and 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0 mg/ml for antifungal) and the minimum inhibitory concentration of the crud extract of P. guajava. Ampicillin and letoconazol were employed as a positive control.

Results: The minimum inhibitory concentration of ethanol leaf extract od psudium guajava ranged from 0.5 to 1.5 mg/ml. the lowest values observed against standard strain of S.aureus, K. pneumonia and medical important clinical isolate of S. aureus and S. pyogenes, whereas, low activity was seen against clinical isolates of S. typhi and P. aeroginosa. Its inhibitory activity against yeasts ranged from 1.5 to 2.0 mg/ml but the inhibitory activity against other fungi was between 3.0 and 3.5 mg/ml. candida albicans and Cryptococcus neoformans were more susceptible to the ethanol extract compared to other fungal strains.

Conclusion: The results showed that psudium guajava has antibacterial and antifungal effect on common bacterial and fungal species. Relatively high concentrations were required to inhibit all fungi than bacteria.

Keywords: Antibacterial activity, Antifungal activity, Psudium guajava
not wholly reflect the behavioral effects observed after administering khat in a dosage similar to those used traditionally. The aim of the present study was to evaluate the effect of sub-chronically administered khat extract with or without alcohol on sexual behavior in male rats. Adult albino wistar male rats were administered either with khat extracts (100, 200, 400mg/kg), amphetamine (1mg/kg), sildenafil (1mg/kg), ethanol (2ml/kg of 2% and 10%), or a combination of khat and ethanol (2%+10%) by intragastric gavages orally for 15 days. Khat (400mg/kg) treated rats demonstrated a statistically significant increase in all sexual parameters except in mounting frequency, intercopulatory interval and copulatory efficiency. Whereas, khat (200mg/kg) treated rats showed a statistically significant increase only in ejaculation latency (P<0.01). In marked contrast, low dose (100mg/kg) of khat extract was found to significantly reduce both mount latency (P<0.05) and intromission latency P<0.01) thereby enhancing sexual motivation/arousal in male rats. Similar results were obtained when khat extract (200mg/kg) and ethanol (10%) were administered concomitantly despite the inhibitory effect observed in male sexual behavior when administered alone. From the present study it can be concluded that higher doses of the extract inhibit sexual behavior in male rats. In contrast, low dose of the extract as well as the concurrent administration of the extract followed by ethanol was found to enhance male rat sexual motivation/arousal.

**Keywords:** Khat; Sexual parameters; Sexual behavior; Ethanol extract


Abstract

Methanol crude extract and chloroform, ethyl acetate, n-butanol and aqueous fractions of the methanolic extract of fruits and stem bark of *Acacia nilotica* (L.) Willd. ex Del. (Fabaceae) were screened for antibacterial activity of diarrhoea-causing bacterial species (Escherichia coli, Shigella dysenteriae and Salmonella typhi) in Ethiopia using standard agar dilution method. Oral acute toxicity studies were also carried out on mice with the ethyl acetate fruit fraction of *A. nilotica*. Compared with standard antibiotic (chloramphenicol and tetracycline) extracts and fractions, *A. nilotica* had low activity.


Abstract

In vitro anthelmintic activities of crude aqueous and hydro-alcoholic extracts of the seeds of *Coriandrum sativum* (Apiaceae) were investigated on the egg and adult nematode parasite *Haemonchus contortus*. The aqueous extract of *Coriandrum sativum* was also investigated for in vivo anthelmintic activity in sheep infected with *Haemonchus contortus*. Both extract types of *Coriandrum sativum* inhibited hatching of eggs completely at a concentration less than 0.5
mg/ml. ED50 of aqueous extract of Coriandrum sativum was 0.12 mg/ml while that of hydro-alcoholic extract was 0.18 mg/ml. There was no statistically significant difference between aqueous and hydro-alcoholic extracts (p > 0.05). The hydro-alcoholic extract showed better in vitro activity against adult parasites than the aqueous one. For the in vivo study, 24 sheep artificially infected with Haemonchus contortus were randomly divided into four groups of six animals each. The first two groups were treated with crude aqueous extract of Coriandrum sativum at 0.45 and 0.9 g/kg dose levels, the third group with albendazole at 3.8 mg/kg and the last group was left untreated. Efficacy was tested by faecal egg count reduction (FECR) and total worm count reduction (TWCR). On day 2 post treatment, significant FECR was detected in groups treated with higher dose of Coriandrum sativum (p < 0.05) and albendazole (p < 0.001). On days 7 and 14 post treatment, significant FECR was not detected for both doses of Coriandrum sativum (p > 0.05). Significant (p < 0.05) TWCR was detected only for higher dose of Coriandrum sativum compared to the untreated group. Reduction in male worms was higher than female worms. Treatment with both doses of Coriandrum sativum did not help the animals improve or maintain their PCV while those treated with albendazole showed significant increase in PCV (p < 0.05).

**Keywords:** Anthelmintic activity; Coriandrum sativum; Haemonchus contortus;

Sheep


**Abstract**

In vitro anthelmintic activity of crude extracts of the ripe fruits of Hedera helix was investigated on eggs and adult nematode parasites Haemonchus contortus. Aqueous extract of H. helix was also evaluated for in vivo anthelmintic activity at dose of 1.13 and 2.25 g/kg in sheep artificially infected with H. contortus. ED50 for egg hatch inhibition was 0.12 and 0.17mg/ml for aqueous and hydro-alcoholic extracts, respectively. There was no statistically significant difference in the activity of the two extract types (p>0.05). Hydro-alcoholic extract showed better in vitro activity against adult parasites compared to the aqueous extract. Significant faecal egg count reduction (FECR) was detected in groups treated with both doses of H. helix (p< 0.05) on day 2 post-treatment. On day 7 post-treatment significant reduction was detected only for higher dose of H. helix (p< 0.05) while on day 14 post-treatment there was no significant FECR in both groups treated with H. helix. The percentage of larvae recovered from culturing faeces obtained from groups of sheep treated with lower and higher doses of H. helix was 47.52% and 36.07%, respectively, which was significantly lower than (p<0.05) that recovered from the control group (60%). Significant (p < 0.05), dose dependent total worm count reduction (WCR) was observed for groups of sheep treated with H. helix. Increasing the dose of H. helix improved the efficacy against the male than the female parasites. Treatment with both doses of H. helix helped the animals maintain their packed cell volume (PCV) unlike the untreated
control group. The overall findings of the current study indicated that *H. helix* has a potential anthelmintic benefit and further in vitro and in vivo evaluation of the different parts and fractions is needed to make use of this plant for therapeutic purposes.

**Key Words:** In vitro and in vivo anthelmintic activity; *Haemonchus contortus*; *Hedera helix*; Sheep


http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1829137/?tool=pubmed

**Abstract**

We studied the use of dried spots of bodily fluids (plasma, whole blood, and mother's milk) on filter paper as a means of sample collection and storage for human immunodeficiency virus type 1 (HIV-1) viral load testing under stringent field conditions. Plasma placed directly in lysis buffer, which is customarily used for viral load assays, was used for comparison in all our experiments. Utilizing reconstruction experiments, we demonstrate no statistical differences between viral loads determined for plasma and mother's milk spotted on filter paper and those for the same fluids placed directly in lysis buffer. We found that the addition of whole blood directly to lysis buffer was unreliable and could not be considered a feasible option. However, viral load measurements for whole blood spotted onto filter paper correlated with plasma viral load values for both filter spots and lysis buffer (Pearson correlation coefficients, 0.7706 and 0.8155, respectively). In conclusion, dried spots of plasma, whole blood, or mother's milk provide a feasible means for the collection, storage, and shipment of samples for subsequent viral load measurement and monitoring. Virus material spotted and dried on filter paper is a good inexpensive alternative for collecting patient material to monitor the HIV-1 viral load. Measuring the HIV-1 burden from whole blood dried on filter paper provides a suitable alternative for low-technology settings with limited access to refrigeration, as can be found in sub-Saharan Africa.

2008


http://ejhd.uib.no/ejhd-v22-n3/302%20Preliminary%20Assessment%20of%20the%20Implementation%20of%20the%20Health%20Services%20Extension%20Program.pdf

**Abstract**

The purpose of this study was to generate usable information on the implementation of the newly initiated Health Services Extension Program in Ethiopia. A cross-sectional study was conducted in seven administrative zones of SNPNPR in February 2008. It was found out that average achievement of construction of health posts, certified role model households and deployment of

http://ejhd.uib.no/ejhd-v22-n1/42%20Levels%20of%20outpatient%20satisfaction%20at%20selected%20health%20faci.pdf

Abstract

**Background:** Satisfaction is one of the meaningful indicators of patient experience of health care services. Asking patients what they think about the care and treatment they have received is an important step towards improving the quality of care, and to ensuring that local health services are meeting patients’ needs. Various studies have reported that satisfied patients are more likely to utilize health services, comply with medical treatment, and continue with the health care provider.

**Objective:** to assess and estimate the perceived levels of satisfaction with health services rendered at government health facilities in selected regions of Ethiopia.

**Methods:** A cross-sectional study that involved an exit interview was conducted in purposively selected government health centers and general hospitals in six regions of Ethiopia. Data were collected using structured questionnaire between June and September 2004. Variables used in the study were grouped and summarized into three components, namely providers' characteristics, services characteristics and cleanliness of the health facilities. Each variable was scored on a 5 point Likert-like scale, ranging from 1 (very dissatisfied) to 5 (very satisfied). The mean score 2.5 is considered as a cut-off point and scores equal and above 2.5 are taken as an indicator of users' perceived satisfaction. Both bivariate and multivariate methods of data analyses were used as deemed necessary.

**Results:** All the three components of investigated variables have reliability coefficients ranging from 0.57 to 0.82. Results of bivariate analyses depicted that the percentage for high mean score satisfaction with health providers' characteristics ranged from 77.25% to 93.23%; with service characteristics 68.64% to 86.48%; and satisfaction with cleanliness ranged from 76.50% to 90.57%. Results of multivariate analysis showed that relatively more explanatory variables were found to be significant in influencing cleanliness (cleanliness of waiting place, examination room and medical equipment). Most of the explanatory variables in service characteristics were not statistically significant as compared to other components.

**Conclusion:** The investigators believe that improved service delivery in health facilities could be achieved by the proper and sustainable implementation of the newly initiated civil service reform program in civil service institutions in the country. Furthermore, periodic assessment of health services and further study,
especially from the user's satisfaction perspective is recommended as a fundamental initiative in the improvement of the performance of health facilities.


Abstract

BACKGROUND: Adhatoda schimperiana is a plant believed to have several therapeutic effects including anti-asthmatic properties. The objective of this study was to investigate the bronchodilatory, anti-inflammatory effects and toxicity of the hydromethanolic extract of leaves of this plant.

METHODS: The isolated guinea-pig trachea pre-contracted with histamine and acetylcholine was used to study the relaxation of hydromethanolic extract of leaves Adhatoda shimperiana. Salbutamol and atropine were used as standards. The effect of the hydromethanol extract of leaves of Adhatoda schimperiana on carageenin-induced acute inflammation was evaluated by the rat hind paw edema method. Oral and interaperitoneal acute toxicity studies of the extract were performed on mice.

RESULTS: The hydromethanolic extract of Adhatoda schimperiana inhibited contractions of guinea pig tracheal chains induced by acetylcholine and histamine with an EC50 of 4.66 mg/ml and 5.92 mg/ml, respectively. Salbutamol and atropine also showed similar concentration dependent relaxation of the tracheal chains pre-contracted with both acetylcholine and histamine. The inhibitory activity atropine was lower than the extract and salbutamol. The extract exhibited a moderate degree of anti-inflammatory activity. The LD50 of the extract for oral acute toxicity study was found to be 1286.76 mg/kg with 95 % confidence limit of 1161.9 – 1418.0. The plant extract therefore presents a relatively low acute toxicity.

CONCLUSION: The results of this study show anti-inflammatory activity and a relatively potent relaxant (bronchodilatory) effect of Adhatoda schimperiana on the tracheal chain of the guinea pig. These activities justify the traditional use of this plant in the treatment of bronchoconstrictive diseases. More detailed studies are required to investigate the mechanism of action, the toxicity and the therapeutic utility of Adhatoda schimperiana for further development towards a proper drug.

KEY WORDS: Adhatoda schimperiana, anti-inflammatory, bronchodilator


Abstract
Background: There has always been an air of uncertainty whether or not traditional healers, especially those in the urban areas, supplied herbal remedies adulterated with modern drugs.

Objectives: This study aims to analyze herbal preparations prescribed by healers against malaria, gonorrhea, tuberculosis, etc. for the presence of conventional drugs, with emphasis on anti-microbial pharmaceutical ingredients.

Methods: Patient simulated convenience based survey method was employed to collect samples of remedies supplied by healers along with other pertinent information on quality of services provided in 60 traditional health care establishments. Presence or absence of conventional drug ingredients in the collected samples of herbal preparations was tested using a validated analytical laboratory method.

Result: Active pharmaceutical ingredients were detected in 39 or 51% of the 76 samples of traditional remedies tested. The average price that healers charge for herbal preparations adulterated with modern drugs was higher than the full dose of conventional drugs sold in retail pharmacies. Even the unadulterated preparations were found to be more expensive than the latter. Documentation of patient history, diagnostic techniques, dispensing practices of the remedies, etc. as observed in the traditional health service delivery outlets/clinics were generally less satisfactory.

Conclusion: Supplying herbal preparations adulterated with modern drugs, particularly with anti-microbial agents entails a number of untoward effects including increased emergence of resistant pathogenic strains. Sustained effort in creating awareness among the communities by health workers and authorities is, therefore, crucial to curb the looming danger to public health. While existing legal frameworks may be sufficient to consider punitive measures against perpetrators of such inappropriate and unauthorized use of anti-microbial agents, new ones that particularly govern the activities of traditional healers need to be put in place.


Abstract:

Objective: Iodine Deficiency Disorders (IDD) as one of the leading nutritional problems has been increasing through time due to iodine deficiency, aggravating factors and IDD knowledge in many parts of Ethiopia. The effect of changing diet and altitude on goiter prevalence is assessed.

Methodology: Randomly selected five regional states (Amhara, Oromiya, Tigray, SNNP and Benshangul-Gumuz) were used to conduct cross-sectional study on IDD. In each region cluster sampling method was applied to select study subjects. Low land and adjacent high land were independently sampled to investigate the role of altitude on goiter prevalence. Totally 6960 children and the same number of biological mothers of the children were included in the clinical examination for goiter and household interview. Urine samples were collected from children for urinary iodine examination/analysis (UIE). Besides, in all clusters qualitative data
were collected on IDD knowledge and cassava introduction, cultivation and consumption.

**Results:** Cassava consumption and living in high altitude were found to be risk factors for IDD. In the two regions (SNNP and Benshangul-Gumuz) among three where cassava is cultivated, those who consume cassava frequently were significantly (p<0.001) affected by goitre than those consuming rarely or not. In the last thirty years cassava consumption has been increasing with the concomitant increase in goitre rate and other associated health problems. Acute cyanide intoxication in children from cassava meal was reported. In Amhara region, goitre rate was significantly (p<0.05) higher in high altitudes than in low both for children and mothers. This was due to significantly (p<0.01) low level of iodine intake in high lands than in low as indicated by UIE. Due to stigma, parents do not send goitrous children to schools and goitrous girls are not wanted for marriage.

**Conclusion:** Besides low level of iodine intake, cassava consumption and living in high altitude were responsible for the observed variation and severity in goitre rates. IDD affects several dimensions of human life including school enrolment and marriage. Addressing IDD in-terms of salt iodization and training communities on cassava processing techniques to remove cyanide, awareness creation on IDD and soil conservation are highly recommended.

**Key words:** Altitude and IDD, Cassava consumption and IDD, IDD aggravating factors, IDD knowledge, UIE

---

370. **Eshetu Lemma, Smit SB, Birhan Beyene, Wondatir Nigatu and Babaniyi OA.**


**Abstract**

**Background:** One of the countries where measles remains endemic is Ethiopia. Previously, sequence data from Measles Viruses (MV) circulating in Ethiopia were obtained from clinical specimens. Now the Ethiopian Health and Nutrition Research Institute (ENHRI) have implemented cell culture techniques to isolate measles virus and molecular epidemiologic studies can be generated more easily.

**Objective:** To characterize the strains of Measles Virus circulating in Ethiopia during measles outbreaks in 2006 using viral isolates, and compare the results to previously identified Ethiopian strains.

**Methods:** A case study and convenience sampling method were conducted on five measles outbreak cases to identify the circulating measles virus genotype in Addis Ababa and Amhara regions of Ethiopia in 2006.

**Results:** Three isolates were obtained from five specimens collected in two regions (1 from Amhara: Bahir Dar, and 2 from Addis Ababa: Addis Ketema and Kolefe Keranio subcities) in Ethiopia during 2006. The viral isolates were analyzed using standard genotyping protocols and were classified as genotype B3, identical to the strain circulating widely in West Africa and imported into Europe (Britain, Netherlands, Germany) and America (Mexico, USA, Canada).

**Conclusion:** The conserved sequences among three isolates, covering a 3-month period, suggest that this B3 strain was circulating in Addis Ababa, Bahir Dar and
possibly elsewhere in Ethiopia. To interrupt the transmission and circulation of MV, Ethiopia needs a strong national program of epidemiological surveillance, with characterization of circulating MV performed in a timely manner.


Abstract
Environmental persistence of Mycobacterium tuberculosis is subject to speculation. However, the reality that infected postmortem tissues can be a danger to pathologists and embalmers has worrisome implications. A few experimental studies have demonstrated the organism's ability to withstand exposure to embalming fluid and formalin. Recently, a failure was reported in an attempt to resuscitate an original isolate of Robert Koch to determine the lifetime of the tubercle bacillus. The present study also considers a historical approach to determine persistence under favorable environmental conditions. It asks whether acid-fast forms observed in tissues of 300-year-old Hungarian mummies can be resuscitated. Finding organisms before the advent of antibiotics and pasteurization may yield valuable genetic information. Using various media modifications, as well as guinea pig inoculation, an attempt was made to culture these tissues for M. tuberculosis. In addition, a resuscitation-promoting factor, known to increase colony counts in high G+C bacteria, was applied to the cultures. Although an occasional PCR-positive sample was detected, no colonies of M. tuberculosis were obtained. Our results may indicate that the life span of the tubercle bacillus is less than a few hundred years, even though in the short run it can survive harsh chemical treatment.


http://ejhd.uib.no/ejhd-v22-n2/212%20Drug%20susceptibility%20of%20Mycobacterium%20tuberculosis%20isolat.pdf

Abstract
Drug resistance tuberculosis threatens the National Tuberculosis Control Programme in several countries. A cross-sectional study was conducted during the period between November 2004 and October 2005 to determine drug susceptibility pattern of Mycobacterium tuberculosis (n=37) isolated from smear negative pulmonary tuberculosis patients (PTB), and to access whether these patients are at risk of harbouring drug resistant strains. Of the 37 M. tuberculosis isolates, 21/37 (29.8%) showed resistance to any of the drugs tested. No MDR-TB strains (resistant to INH and Rifampicin) were observed in this study. No statistically significant differences appeared in the frequency and pattern of resistance between isolates from smear positive and negative cases. This study provides potentially valuable information of the value of culture in the diagnosis of smear-negative cases to certain extent in untreated newly diagnosed PTB
patients. Smear negative TB patients can harbor drug resistant strains like their smear positive counterparts.


Abstract

The exact taxonomic identity of members of the Simulium damnosum Theo bald complex in Ethiopia was not known until recently. A cytotaxonomic analysis of larval chromosomes from the Kulfo River area in the southern Ethiopia, from where the ‘Kulfo’ form was reported, and from the Awash River at Sodere in central Ethiopia has revealed the existence of two newly recognized species, namely *Simulium kulfoense* and *Simulium soderense*. Although three fixed and 11 floating inversions in the chromosomes of the ‘Kulfo’ form were described in an ideogram, in the present study four fixed and 17 floating inversions were observed, out of which only seven floating inversions were the same as Dunbar’s, indicating that the remaining 10 inversions were either missed or misinterpreted. Though both species share many inversions, *S. kulfoense* sp. nov. has a diagnostic inversion on chromosome II, IIL-E6, with no sex-linked chromosomal arrangement, while *S. soderense* sp. nov. has a sex-linked inversion, IIS-3, which warrants it as a distinct species. Both of these new species also share many inversions with the recently described new species from south-western Ethiopia, *Simulium kaffaense*, including the fixed inversions IIL-E1 and E3. Since both the study sites are known to be free of onchocerciasis, and the flies are not anthropophilic, both the species are not presumed to be vectors of human onchocerciasis. The presence of IS-1 and a complex inversion possibly involving IL-3 strongly indicates that the two species belong to the ‘Nile’ phylogenetic group of *S. damnosum* s.l.

Keywords: Diptera, Simuliidae, Simulium damnosum complex, onchocerciasis, Simulium kulfoense, Simulium soderense.


Abstract

Background: Iron deficiency anaemia (IDA) is one of the most common causes of nutritional problem, and is of great public health significance affecting children, adolescents and women of reproductive age worldwide. The magnitude of IDA in the general population of Ethiopia has not yet been well documented.

Objective: To estimate the magnitude of IDA among women of reproductive age in nine administrative regions.

Methods: A cross-sectional study of analytical nature was conducted in 270 clustered villages drawn from 9 administrative regions of the country between June and July 2005. A total of 22,861 women of reproductive age (15-49 years) were examined clinically for pallor and 5% of these subjects were systematically
selected and assessed further for their haemoglobin (Hgb) and serum ferritin (SF) status.

**Results:** The prevalence rate of clinical anaemia, anaemia, ID (iron deficiency) and IDA were 11.3%, 30.4%, 49.7% and 17.0% respectively. The majority of anaemic women were in the category of mild (19.3%) to moderate (10.3%) and severe anaemia was 0.9%. A significantly higher proportion of clinical anaemia [26.7% (95% CI: 24 to 28%)], anaemia (Hgb) [79.4% (95% CI: 72 to 86%)], ID [65.1% (95% CI: 72 to 86%)] and IDA [58.0% (95% CI: 55 to 76%)] was observed in Afar signifying distinct regional variation. The most affected age groups were those between 36-49 years and the difference noted was statistically significant.

**Conclusion:** This study substantiates the existence of mild to moderate form of IDA among women of reproductive age and underlines the need for iron supplementation to all reproductive women during the antenatal period with more attention to the most affected regions.


**Abstract**
The in vitro antigonorrheal activity of the seeds of *Acacia nilotica* (L.) willd.ex Del, the stem bark of *Croton macrostachyus* Del., the roots of *Cucumis pustulatus* Naud.ex Hook. f, the roots of Foeniculum vulgare Miller, and leaves of withania somnifera (L.) Dunal were studied using the agar dilution method. Different concentration of the 80% methanol and aqueous extracts, and the chloroform and aqueous fraction of the 80% methanol extracts were tested against clinical isolates of Neisseria gonorrhoeae. Significant antigonorrheal activity was exhibited by the 80% methanolic extracts of all plants whereas the aqueous extracts failed to show any activity. Furthermore, chloroform fractions of the hydroalcholic extracts were seen to be more active as compared to their respective aqueous fractions. The findings of the study support the popular use of the plants in the Ethiopian traditional medicine for the treatment of gonorrhea.

**Key words:** In vitro antigonorrheal activity, medicinal plants, hydroalcholic extracts, agar dilution method, Neisseria gonorrhoeae


**Abstract**
We undertook a study to demonstrate the potential contribution of oral-fluid (OF) antibody prevalence surveys in evaluating measles vaccine campaigns. In Asela town, southern Ethiopia, oral fluids were collected from 1928 children aged 9 months to 5 years attending for campaign immunization in December 1999 and 6 months later, from 745 individuals aged 9 months to 19 years, in the same
Measles antibody status was determined by microimmune measles specific IgG enzyme immunoassay (EIA). Antibody prevalence was estimated at 48% in children attending for vaccination (pre-campaign), and 85% post-campaign in the comparable age group. The estimated reduction in the susceptible proportion was 75%. In older children the proportion antibody negative post-campaign was 28% in 7-9 year olds, and 13% in 10-14 year olds levels of susceptibility which raise concern over continued measles transmission. This is the first evaluation of a measles vaccine campaign based on oral-fluid seroprevalence surveys and it demonstrates the merit of oral-fluid surveys in informing health authorities about vaccination strategy refinement.


Abstract

Adhatoda schimperiana has been used in Ethiopian traditional medicine as a remedy for bronchial asthma and cough. In the present study, bronchodilatory and respiratory distress protective effect of solvent fractions of hydroalcoholic extract of the leaves of the plant was evaluated on guinea-pigs. The chloroform fraction of the crude extract showed a statistically significant (p<0.05) dose dependent trachea relaxant activity and respiratory distress protective effect. These results suggest that the alkaloid-rich fraction of the crude extract might be responsible for the claimed antiasthmatic effect of the plant.

Key words: Adhatoda schimperiana; Bronchial asthma; Bronchodilator; Guinea-pig; Alkaloid


Abstract

Background: Human Herpes Virus (HHV-8) is related to Kaposi Saracoma, an opportunistic infection occurring with HIV infection. Little is known about the seroepidemiology of Human Herpesvirus 8 (HHV-8) infection among Ethiopian women, even though women are a major HIV risk group in Ethiopia.

Objective: This study aimed at determining the seroprevalence of HHV-8 infection in HIV-1-infected and uninfected pregnant women in five selected regions of Ethiopia.

Methods: A cross-sectional study was conducted from December 2006 to June 2007 where pregnant women were recruited after age-matching in groups. A total of 400 pregnant women were enrolled, with 200 being HIV-infected and 200 being HIV-uninfected Sera were screened for IgG lytic antibody to HHV-8 using
an Indirect Fluorescence Assay (IFA) in Virology Unit of Ethiopian Health and Nutrition Research Institute (EHNR1).

**Results:** Of 400 pregnant women attending antenatal clinic (ANC) testing sites of five regions in Ethiopia, 212 (53.0%) were positive for HHV-8 IgG lytic antibody. There was a high prevalence of HHV-8 infection among HIV-1-infected pregnant women (138, 69.0%) as compared with HIV-1-uninfected pregnant women (74, 37.0%).

**Conclusion:** The study shows a high prevalence of HHV-8 infection among HIV-1-infected pregnant women as compared with HIV-1-uninfected pregnant women. Therefore, creating awareness and educating women on safe sexual practice and avoiding deep kissing may be a fundamental ways to limit the roots of transmission. Moreover, initiating strong antiretroviral therapy (ART) for HIV infected women would be best treatment prior to the development of Kaposi’s sarcoma (KS).


**Abstract**

**Introduction:** Malaria and geo-helminth infections are causes of severe illness and poor economic growth. Overlapping distributions of both parasites lead to high rate of co-infection.

**Objective:** The study was designed to assess public health importance of Malaria-geo-helminth co-infection with an emphasis on anemia in Asendabo, south west Ethiopia.

**Methods:** A total of 370 suspected malaria cases were involved in the study. Each stool sample was analyzed using Kato-Katz techniques. Thick blood films were used for detection and quantization of malaria parasites. Hemoglobin was determined using Sysmex hematology analyzer.

**Result:** 61.6% individuals were positive for at least one intestinal helminth and/or protozoan infection. Hookworm was the most prevalent (38%) followed by Ascaris lumbricoides (19.2%) and Trichuris trichiura (10.3%). Furthermore, 32.4% of the study participants were positive for either of the two Plasmodium species; of which 64.3% were P. falciparum and the rest 35.7% were P. vivax. Based on WHO definition of anemia, 27.6% were anemic cases and both hookworm and malaria infections were significantly associated with anemia (P < 0.05). 20.8% of study participants were co-infected with malaria and any helminth. Hookworm and malaria positive individuals had low mean hemoglobin concentration than their respective negative counter parts and the difference was significant (P < 0.05). Furthermore, mean hemoglobin concentration was significantly lowered in malaria-hookworm co-infected individuals than individuals infected with either hookworm or malaria infection alone (F = 69.39, P = 0.000).
Conclusion: In general, malaria hookworm co-infections worsen hemoglobin loss. And we recommend that individuals co-infected should receive prompt health care to control and prevent morbidity/mortality from anemia.


http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2792165/?tool=pubmed

Abstract

Background: Prompt laboratory diagnosis and initiation of treatment are effective components of leishmaniasis control. Detection of Leishmania parasites by ex-vivo culture of lesion scrapings is considered a definitive diagnostic method preceding initiation of treatment.

Objective: A pilot study to find alternative medium that could reduce the cost of culturing from patient lesions for diagnosing leishmaniasis.

Method: GALF-1 medium was formulated in our lab from locally available inexpensive solutions and powders in the presence of urine from healthy individuals. Amastigote to promastigote transformation, recovery of parasites after cryopreservation, cost and mass cultivation was compared using the following media: GALF-1, RPMI 1640, and conventional Locke's semi-solid medium (LSSM), a modification of Novy-MacNeal-Nicolle culture media, which uses Locke's solution as an overlay.

Results: GALF-1 preparation was cheap and the components available in low-income countries such as Ethiopia. Preparation was simple, not requiring autoclaving and extra distilled water. GALF-1 was able to transform amastigotes from Ethiopian patients' samples and could be used to cultivate promastigotes in large quantities. GALF-1 decreased Leishmania culture costs by approximately 80-95% compared to LSSM and RPMI 1640, respectively. Promastigotes cultured with GALF-1 could be cryo preserved in liquid nitrogen with comparable re-culture potential.

Conclusion: Affordability of diagnostic assays is a key issue for endemic resource-poor countries and the possibility to cut the cost of the efficient culture method for diagnosis through the use of inexpensive, locally formulated reagents could improve the diagnosis of leishmaniasis in Ethiopia and in other low-income countries.

Keywords: Leishmania culture, urine, liquid medium, low-income countries


Abstract

Processing effect on Coccinia grandis (ivy gourd) and Trigonella foenumgraecum (fenugreek) carotenoids was studied. This paper presents findings on the effect of
blanching (boiling water, saline water and steam) and drying (lyophilizer, sun, shade and dryer) on retention of carotenoids. Carotenoids were extracted, identified and quantified by high performance liquid chromatography technique. Xanthophylls (neoxanthin, violaxanthin, lutein, zeaxanthin) and b-carotene were detected in both vegetables; while on the contrary, a-carotene was identified only in ivy gourd. Ivy gourd had a higher total of xanthophylls (104 mg/100 g) and hydrocarbon carotenoids (35 mg/100 g) than fenugreek with 86 mg/100 g and 31 mg/100 g, respectively (all dry weight basis). Results reveal that blanching methods did not affect carotenoids level as compared with raw. Except lyophilization, drying methods significantly reduced most carotenoids, sun drying being highly detrimental. It is recommended to use ivy gourd as source of carotenoids for health benefits. Among the processing methods tested, boiling water blanching is most preferable.


Abstract

Background: In the search for cost-effective interventions to reduce morbidity and mortality in HIV disease, the identification of nutritional status and levels of micronutrients is very important.

Objective: To generate information on the level of energy malnutrition and on vitamin A, zinc, and hemoglobin levels and their relationships with disease status in HIV-infected adults in Addis Ababa, Ethiopia.

Methods: A cross-sectional study was carried out on 153 HIV-positive adults (19% male, 81% female) living in Addis Ababa. The nutritional status and the levels of zinc, retinol, and hemoglobin were determined by anthropometric and biochemical methods. CD4+ counts and C-reactive protein levels were measured by standard methods.

Results: Of the patients, 18% were chronically energy deficient, 71% were normal, and 11% were overweight. Serum zinc levels were low (< 10.7 micro mol/L) in 53% of subjects, and serum retinol levels were low (< 30 micro g/dL) in 47% of subjects. Low hemoglobin levels (< 12 g/dL) were observed in only 4.72% of the study population. CD4+ counts under 200/mm3 and elevated C-reactive protein levels were both found in 21% of the subjects. CD4+ counts were positively and significantly correlated with hemoglobin (r = 0.271, p < .001), zinc (r = 0.180, p < .033), and body mass index (r = 0.194, p < .017). There were significant negative associations between levels of C-reactive protein and levels of zinc (r = -0.178, p < 0.036) and hemoglobin (r = -0.253, p < .002).

Conclusion: Our results provide evidence that compromised nutritional and micronutrient status begins early in the course of HIV-1 infection. Low serum zinc and vitamin A levels were observed in almost half of the subjects. The clinical significance of low serum zinc and vitamin A levels is unclear, and more research is required.

Abstract
Background: Intestinal microsporidiosis is the most common cause of chronic diarrhea in HIV/AIDS infected patients. The diagnosis of intestinal microsporidia depends on the detection of the spores by staining either with Chromotrope 2R or with fluorochrome uvitex 2B methods.

Objective: To compare the Chromotrope-2R and Uvitex-2B in detecting intestinal microsporidial spores from HIV/AIDS patients at Nekempte Hospital.

Methods: A total of 120 single fresh stool samples were collected, and processed by water ether sedimentation method; stained with Uvitex-2B and observed microsporidial spore under fluorescent microscope. From same stool samples, smear were prepared and stained with Chromotrope-2R method for the detection of intestinal microsporidial spores using light microscope.

Results: Uvitex 2B detected 5/120 (4.2%) while Chromotrope 2R detected 4/120 (3.3%) and there was no statistical significance difference between the two methods (P>0.05). The sensitivity and specificity of the chromotrope-2R method relative to Uvitex-2B were 80% and 100%, respectively and positive and negative predictive values of Chromotrope-2R relative to the Uvitex 2B were 100% and 99%, respectively.

Conclusion: Based on its relative simplicity for processing, in terms of low cost materials (light microscopes compared to fluorescent microscopes) and reagents, make Chromotrope-2R to be recommended for diagnosis of microsporidia infection in peripheral labs. Even though Uvitex-2B is superior, its application in peripheral health facilities is questionable and demanding.


http://www.biomedcentral.com/1471-2326/9/7

Abstract
Background:- In Ethiopia, the existence of iron deficiency anemia is controversial despite the fact that Ethiopia is one of the least developed in Africa with a high burden of nutrient deficiencies.

Methods:- The first large nutrition study of a representative sample of women in Ethiopia was conducted from June to July 2005 and a systematically selected sub-sample of 970 of these subjects, 15 to 49 years old, were used in this analysis of nutritional anemia. Hemoglobin was measured from capillary blood using a portable HemoCue photometer. For serum ferritin, venous blood from antecubital veins was measured by an automated Elecsys 1020 using commercial kit. Diets were assessed via simplified food frequency questionnaire. The association of anemia to demographic and health variables was tested by chi-square and a
A stepwise backward logistic regression model was applied to test the significant associations observed in chi-square tests.

Results: Mean hemoglobin ± SD was 11.5 ± 2.1 g/dL with a 29.4% prevalence of anemia. Mean serum ferritin was 58±41.1 ug/L with a 32.1% prevalence of iron deficiency. The overall prevalence rate of iron deficiency anemia was 18.0%. Prevalence of anemia, iron deficiency, and iron deficiency anemia was highest among those 31-49 years old (p < 0.05). Intake of vegetables less than once a day and meat less than once a week was common and was associated with increased anemia (p = 0.001). Although the prevalence of anemia was slightly higher among women with parasitic infestation the difference was not significant (p = 0.9). Nonetheless, anemia was significantly higher in women with history of illness and the association was retained even when the variable was adjusted for its confounding effect in the logistic regression models (AOR = 0.3; 95%CI = 0.17 to 0.5) signifying that the most probable causes of anemia is nutrition related and to some extent chronic illnesses.

Conclusion: Moderate nutritional anemia in the form of iron deficiency anemia is a problem in Ethiopia and therefore, the need for improved supplementation to vulnerable groups is warranted to achieve the United Nation's Millennium Development Goals. Chronic illnesses are another important cause of anemia.


Abstract

The study was conducted to determine the demographic and health-related risk factors of subclinical vitamin A deficiency in Ethiopia. Blood samples were collected from 996 children in 210 clusters across the nation for analysis of serum retinol. Interviews were conducted with the respective mothers of the 996 children on presumed risk factors of vitamin A deficiency. A higher subclinical vitamin A deficiency was associated with: not receiving vitamin A supplement over the year, having been ill during the two weeks preceding the survey, no or incomplete vaccination, belonging to a mother with high parity, and low levels of awareness of vitamin A. Moreover, being from Muslim household was strongly associated with higher levels of subclinical vitamin A deficiency. Among the risk factors identified, low levels of vaccination, high parity, and low levels of maternal awareness of vitamin A contributed to higher risks of vitamin A deficiency among Muslim children. The findings underscore the need for creation of strengthened awareness of family planning and importance of vitamin A, promotion of vaccination and child health, intensification of vitamin A supplementation, and in-depth investigation on factors contributing to increased vulnerability of Muslim children.

Key words: Cross-sectional studies; Risk factors; Serum retinol; Vitamin A; Vitamin A deficiency; Xerophthalmia; Ethiopia

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2701272/?tool=pubmed

Abstract
In the absence of chemoprophylaxis, HIV-1 transmission occurs in 13-42% of infants born to HIV-1 positive mothers. All exposed infants acquire maternal HIV-1 antibodies that persist for up to 15 months, thereby hampering diagnosis. In resource limited settings, clinical symptoms are the indices of established infection against validated laboratory based markers. Here we enrolled 1200 children hospitalized for diarrheal and other illnesses. 20-25% of those tested, aged 15 months or younger, were found to be HIV-1-seropositive. Where sufficient plasma was available, HIV-1 RNA detection was performed using a subtype-insensitive assay, with 71.1% of seropositive infants presenting with diarrhea showing positive. From sub-typing analysis, we identified that viruses of the C' sub-cluster were predominated amongst infants. Although this study may overestimate the HIV-1 frequency through testing symptomatic infants, diarrhea can be seen as a useful marker indicating HIV-1 infection in infants less than 15 months old.

Keywords: Diagnosis, Diarrhea, Children, Seropositive, RNA, Ethiopia.


Abstract
Adhatoda schimperiana has been used in Ethiopian traditional medicine as a remedy for bronchial asthma. In the present study, tracheal relaxant effect of column chromatographic elutes (CCEs) of the chloroform fraction of the leaves of the plant was investigated on guinea-pigs. The intermediate polar CCE of the chloroform fraction showed tracheal relaxant effect as observed by a right-ward shift of the dose-response curve. The maximum response to histamine in presence of the intermediate polar CCE was significantly lower than that of the chloroform fraction (p<0.05). These results suggest that bioactivity-guided fractionation could show improved tracheal relaxant activity, and the alkaloid-rich fraction of the crude extract might be responsible for the claimed anti-asthmatic effect of the plant.

KEY WORDS: Adhatoda schimperiana, Alkaloid, Bronchial sthma, Guinea-pig trachea

2010

388. Abraham Ali, Fasil Mengistu1, Kedir Hussen, Garoma Getahun, Asefa Deressa, Eshetu Yimer and Kassahun Tafese. Overview of Rabies in and around

Abstract
A retrospective data on the number of confirmed animal rabies cases and applied rabies control measures over the period 2003-2009 were collected and analyzed to elucidate the situation of animal rabies in and around Addis Ababa. Over the last seven years, 2517 animals brain tissue samples from Dogs, Cats, Cattle, Horses, Donkeys, Shoats, Hyenas and Monkeys were examined for rabies using Fluorescent Antibody Test. Out of all samples examined, 76.9% (n=1936) were positive for rabies antigen. A statistically significant difference ($\chi^2 = 34.08(1)$, $P<0.0001$) in sample positivity was observed between male and female dogs, which seems higher proportion in males 79.2% as compared to 66.9% in females. Higher proportions of cases were confirmed in stray (86.3%) than owned dogs (73.5%). The difference was highly significant ($\chi^2 = 34.79(1)$, $P<0.0001$). There was highly significant difference ($\chi^2 = 46.73(1)$, $P< 0.0001$) in positivity on the vaccination status of dogs. The annual vaccination coverage varies from 1.8-3.8% during the last seven years. The annual confirmed number of rabies cases dropped in 2005 and 2007 during the last seven years rabies trend in and around Addis Ababa. Statistically significant difference was observed (F=11.65, P< 0.0001) in mean number of confirmed rabies cases among 12 calendar months, more number of animal rabies cases was confirmed in summer season.

Keywords: Addis Ababa, Animal, Control, Dog, Positivity, Rabies, Trend


Abstract
Setting:-National Tuberculosis Reference Laboratory, Addis Ababa, Ethiopia.
Objectives:-To determine the drug susceptibility pattern of Mycobacterium tuberculosis isolates and to genetically characterise multidrug-resistant tuberculosis (MDR-TB) isolates.
Design:- A total of 107 M. tuberculosis isolates recovered during the period December 2005-August 2006 were tested for drug susceptibility against streptomycin, isoniazid, rifampicin and ethambutol (SHRE) using the proportion method on Löwenstein-Jensen medium. The MDR-TB isolates were tested against kanamycin, ciprofloxacin, capreomycin, D-cycloserine and ethionamide. Genotyping was performed using spoligotyping.
Results:- MDR-TB was observed in one of the 44 new cases (2.3%) and 45/63 previously treated patients (71.4%). Drug susceptibility testing against second-line drugs (SLDs) showed that 26.1% of all MDR-TB isolates were susceptible to all SLDs tested and 73.9% were resistant to one or more classes of SLD. Extensively drug-resistant (XDR) TB was detected in two isolates (4.4%). T3_ETH was the predominant spoligotype, followed by CAS_KILI. In this African setting, no Beijing spoligotype was identified.
**Conclusion:** Both MDR- and XDR-TB are present in Ethiopian patients. MDR-TB was found to be associated with T3 and Central Asian genotypes.


**Abstract**

Malaria in Ethiopia is one of the leading causes of death (21.8 percent), consultation in outpatient departments (17.8 percent) and hospital admissions (14.1 percent) (2;14). To overcome this problem, the Malaria Control Program (Federal Ministry of Health) has designed a community-based malaria treatment approach that played key roles in malaria epidemic control and community mobilization as well as vector control operations. In this approach, Community Health Workers (CHWs) and Village Malaria Workers, volunteers selected by community and trained on malaria diagnosis and treatment as well as indoor residual spray for few days (16). However, sustainability of this approach has been a challenge to the malaria control program. Thus, institutional arrangements in which every Kebele (the smallest administrative unit of 5,000 people) has a health post staffed by two Health Extension Workers (HEW) as part of the country’s health system is a breakthrough to strengthen malaria control. A study has shown that more than half of the patients with fever visit CHWs and private health facility services (4).

**Key words:** Antimalarials, Care access, Health policy, Ethiopia.


**Abstract**

**Background:** Rabies, a viral disease that affects all warm-blooded animals, is widespread in many regions of the world. Human rabies, transmitted by dogs is an important public health issue in Ethiopia. To-date, effective rabies control program still remains to be a reality and needs to be strengthened.

**Objective:** Reviewing of recorded data to generate information on the status of rabies in Ethiopia for the year 2001-2009.

**Methods:** A retrospective data were used from the Ethiopian Health and Nutrition Research Institute rabies case record book registered between 2001 and 2009.

**Results:** The fatal human cases during the period of study were 386 humans with annual range of 35 to 58. The overall post exposure treatment for humans was 17,204 within and around Addis Ababa. During the same period, 20,414 suspected rabid animals were clinically examined; nevertheless, only 10% were positive for rabies. Among 3,460 animal brains investigated in the laboratory with FAT, 75% were confirmed as rabies positive. The production and distribution of anti-rabies
vaccine reached 130,673 treatment doses for human vaccine and 85,055 doses for animal vaccine respectively in the period of 2001-2009.

**Conclusion:** The recorded data showed the underestimate of rabies diagnosis, post exposure prophylaxis and fatal human cases, which could be attributed due to the absence of national rabies surveillance system. Therefore, It is of paramount importance to assess and map the national picture of rabies within a given time interval to launch a national rabies control strategy.


**Abstract**

**Background:** Artemether/Lumefantrine (Coartem(R)) has been used as a first-line treatment for uncomplicated Plasmodium falciparum infection since 2004 in Ethiopia. In the present study the therapeutic efficacy of artemether/lumefantrine for the treatment of uncomplicated P. falciparum infection in Kersa, Jima zone, South-west Ethiopia, has been assessed.

**Methods:** A 28 day therapeutic efficacy study was conducted between November 2007 and January 2008, in accordance with the 2003 WHO guidelines. Outcomes were classified as early treatment failure (ETF), late clinical failure (LCF), late parasitological failure (LPF) and adequate clinical and parasitological response (ACPR).

**Results:** 90 patients were enrolled and completed the 28 day follow-up period after treatment with artemether/lumefantrine. Cure rate was very high, 96.3%, with 95% CI of 0.897-0.992 (PCR uncorrected). Age-stratified data showed adequate clinical and parasitological response (ACPR) to be 100% for children under 5 and 97.4% and 87.3% for children aged 5-14, and adults, respectively. There was no early treatment failure (ETF) in all age groups. Fever was significantly cleared on day 3 (P<0.05) and 98% of parasites where cleared on day 1 and almost all parasites were cleared on day 3. 72.5% of gametocytes were cleared on day 1, the remaining 27.5% of gametocytes were maintained up to day 3 and total clearance was observed on day 7. Hemoglobin concentration showed a slight increase with parasitic clearance (P>0.05). No major side effect was observed in the study except the occurrence of mouth ulcers in 7% of the patients.

**Conclusion:** The current study proved the excellent therapeutic efficacy of artemether/lumefantrine in the study area and the value of using it. However, the proper dispensing and absorption of the drug need to be emphasized in order to utilize the drug for a longer period of time. This study recommends further study on the toxicity of the drug with particular emphasis on the development of oral ulcers in children.

Abstract
The aim of this work was to evaluate the antihypertensive activity of the hydroalcohol extract of the leaves of Syzygium guineense (Willd) D.C. (Myrtaceae) in a 1-kidney-1-clip rat model and its vasorelaxant effect on isolated aorta. The extract reduced blood pressure in a dose and time dependent fashion. Following 3 days of treatment, single oral daily doses of 50, 100 and 150 mg/kg caused an overall reduction (p < 0.05) of systolic blood pressure by 6.9, 34.0 and 40.8 mmHg, respectively. The diastolic blood pressure was, however, significantly reduced (p < 0.05) by 100 mg/kg (10.3 mmHg) and 150 mg/kg (18.4 mmHg) doses only. The mean blood pressure was reduced by 5.0, 18.3 and 25.9 mmHg by the respective doses. The extract also caused a dose-dependent relaxation of aorta precontracted with KCl at a concentration of 5-70 mg/mL, with a maximum relaxation of 56.22% achieved at 70 mg/mL concentration. The relaxation mechanism was found to be independent of the endothelium system, muscarinic receptors, histamine receptors, ATP dependent K(+) channels, cyclooxygenase enzymes and cGMP/NO pathway. The findings suggest that the extract had an antihypertensive effect most likely caused by dilation of the blood vessels, a confirmation for the folkloric use of the plant.

Abstract
The present study was conducted between September 2006 and April 2007 with the aim of assessing the occurrence of camel mastitis and bacterial causes associated with it and evaluating Fat and Protein content of camel milk in Gewane district, Afar Regional State, Northeastern Ethiopia. Lactating camels which are traditionally managed were randomly selected and quarter milk samples were collected from camels in different herds. Quarter milk samples (n = 404) from lactating camels (Camelus dromedarius) in Gewane district were examined for mastitis. Twenty one (20.8%) was diagnosed as clinical mastitis cases. Thirty one (30.7%) udders examined were infested with ticks, had lesion and 45.2% had mastitis. There were significant association (p<0.05) between tick infestation and mastitis. Lactating camels at early and mid lactation were found most affected by mastitis (p<0.05) than those at late lactation. One hundred ninety six quarter milk samples (48.5%) were positive for California mastitis test (CMT) and 164 (83.7%) yielded pathogenic bacteria. A positive correlation (r = 0.76) was observed between CMT positive results and presence of major pathogens in camel milk samples. The main mastitis pathogens isolated were Staphylococcus aureus, Coagulase-negative staphylococci, Streptococcus agalactiae, Streptococcus dysgalactiae and E.coli. The average mean fat and protein percentage in CMT-negative milk were 3.83%± 0.081 and 2.85 ± 0.024 respectively. However, in CMT-positive milk it was 1.97 ± 0.071 and 2.91± 0.130 respectively. The study results suggest that mastitis in camels was prevalent in Gewane district and was associated with a relatively low protein and fat content of camel milk. Detailed
research on camel milk is essential to promote and restore health and to help farming communities who have perfected camel-keeping.

**Key words:** *Camelus dromedarius*, Mastitis, CMT, Etiology, Prevalence.


http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2953481/?tool=pubmed

**Abstract**

Cutaneous leishmaniasis (CL) is caused by Leishmania infection of dermal macrophages and is associated with chronic inflammation of the skin. *L. aethiopica* infection displays two clinical manifestations, firstly ulcerative disease, correlated to a relatively low parasite load in the skin, and secondly non-ulcerative disease in which massive parasite infiltration of the dermis occurs in the absence of ulceration of epidermis. Skin ulceration is linked to a vigorous local inflammatory response within the skin towards infected macrophages. Fas ligand (FasL) and Tumor necrosis factor-related apoptosis-inducing ligand (TRAIL) expressing cells are present in dermis in ulcerative CL and both death ligands cause apoptosis of keratinocytes in the context of Leishmania infection. In the present report we show a differential expression of FasL and TRAIL in ulcerative and non-ulcerative disease caused by *L. aethiopica*. In vitro experiments confirmed direct FasL- and TRAIL-induced killing of human keratinocytes in the context of Leishmania-induced inflammatory microenvironment. Systemic neutralisation of FasL and TRAIL reduced ulceration in a model of murine Leishmania infection with no effect on parasitic loads or dissemination. Interestingly, FasL neutralisation reduced neutrophil infiltration into the skin during established infection, suggesting an additional proinflammatory role of FasL in addition to direct keratinocyte killing in the context of parasite-induced skin inflammation. FasL signalling resulting in recruitment of activated neutrophils into dermis may lead to destruction of the basal membrane and thus allow direct FasL mediated killing of exposed keratinocytes in vivo. Based on our results we suggest that therapeutic inhibition of FasL and TRAIL could limit skin pathology during CL.


**Abstract**

**Background:** Under nutrition is a persistent problem in Africa, especially in rural areas where the poor largely depend on staples and have limited access to a diverse diet. Quality protein maize (QPM) consists of maize varieties biofortified with increased lysine and tryptophan levels. Several studies in controlled settings have indicated the positive impact of QPM on the nutritional status of children.
Objective: Two 1-years, randomized, controlled studies were undertaken to measure the effect of QPM on the nutritional status of children consuming typical maize-based diets when QPM was cultivated by their households in the western Ethiopian highlands.

Methods: The first study used a cluster-randomized design with 151 children aged 5 to 29 months; the second study used a completely randomized design with 211 children aged 7 to 56 months. In both studies, half of the households were provided with QPM seed and the other half with seed of an improved conventional maize variety.

Results: Under nutrition was pervasive, and maize was the dominant food in the children's complementary diets. In the first study a positive effect of QPM was observed for weight but not height, with children in the QPM group recovering from a drop in weight-for-height. In the second study, children consuming conventional maize progressively faltered in their growth, whereas children consuming QPM did not change significantly in height-for-age and had a marginal increase in weight-for-age.

Conclusions: These studies indicate that in major maize-producing and -consuming areas of Africa, home cultivation and use of QPM in children's diets could reduce or prevent growth faltering and may in some cases support catch-up growth in weight.


Abstract

Objective: To investigate the country-wide extent of folate deficiency and risk factors in Ethiopian women.

Design: Cross-sectional study.

Methods: Multistage cluster sampling and systematic sampling were used to select 970 women aged 15 to 49 years from nine accessible regions of Ethiopia. Demographic and health information was collected via questionnaire. Biological samples were collected by medical technologists. Outcome measures: demographic and health variables, food frequency, haemoglobin status, ferritin status and folate status.

Results: Mean ± SD plasma folate was 5.57 ± 3.84 ng/mL. Forty-six per cent of women had severe folate deficiency (≤ 4 ng/mL) and 21.2% had marginal folate deficiency (> 4–6.6 ng/mL) with unequal prevalence across the country. Severe folate deficiency was higher in women who were unmarried (p = 0.002), had parity of 4–6 (p = 0.001), used oral contraceptives (p = 0.01), had no illnesses (p = 0.001), had intestinal parasites (0.001), followed lower plant food diets (0.001), followed lower animal product diets (0.001), had no anaemia (0.001) and had no iron deficiency (0.001). In logistic regression analysis, only low plant food diets (p = 0.001) and iron deficiency (p < 0.001) retained their significance with regard to folate deficiency. The odds for developing folate deficiency was 0.9 times less likely among those with higher plant food intake (AOR-0.9; 95%CI – 0.72–1.2)
Conclusions: Folate deficiency is widespread in Ethiopian women, emphasising the need for sustainable folate intake through dietary diversification and appropriate public health measures.


Abstract

In Ethiopia, commercially made complementary foods are not available and affordable for the majority of the poor. Complementary foods prepared traditionally from locally available raw materials (such as cereals) have high viscosity when reconstituted. This limits the total food intake by infants. The main objective of this study was to investigate the effect of germination on energy and nutrient density of sorghum-based complementary foods. Two varieties of sorghum (Sorghum bicolor) (L.) Moench) grains (varieties 76T1#23 and Meko) were collected, cleaned, soaked for 22 hours at room temperature (22±20C); germinated for 48 hours at the soaking temperature; dried at 550C for 24 hours, and milled into a fine homogeneous powder. Five complementary foods were formulated by using a blend of ungerminated to germinated sorghum flours in ratios of 100:0, 75:25, 50:50 and 25:75, 0:100, respectively. Germination increased significantly (p<0.05) contents of crude protein from 12.25% and 10.44% to 12.65% and 10.87% for varieties 76T1#23 and Meko, respectively. Similarly, the respective contents of total phosphorus, iron, zinc and calcium (mg/100g) were significantly (p<0.05) increased from 208.42, 8.21, 1.86 and 17.09 to 223.26, 11.99, 2.01 and 25.93 for variety 76T1#23 and from 183.04, 7.19, 1.78 and 20.99 to 192.91, 10.98, 1.89 and 29.62 for variety Meko. In contrast, germination decreased viscosity values (cP) (at five percent dry matter concentrations) from 2888.78 and 2988.43 to 1147.11 and 1148.20 for varieties 76T1#23 and Meko, respectively and at 15% dry matter concentrations from 8684.74 and 8791.98 to 2376.17 and 2416.24 for variety 76T1#23 and Meko, respectively. Blending of ungerminated with germinated sorghum flour also decreased viscosity values significantly. Panelists preferred gruels prepared from 100% ungerminated sorghum flour followed by gruels prepared from a blend of 75% ungerminated and 25% germinated sorghum flours. Gruels prepared from 100% germinated sorghum flour were least preferred. Hence, germination appeared to be a promising food processing method to improve energy and nutrient density and decrease viscosity values of complementary foods.

Key words: Complementary food, Germination, Nutrient density


Abstract

Two malaria rapid diagnostic tests (RDT), Parascreen Pan/Pf and Paracheck Pf, were tested in rural health centers in Ethiopia against independent expert microscopy (the gold standard). Participants (n =1997) presented with presumptive malaria to ten health centers in Amhara Regional State during the 2007 peak malaria season (October to December). By microscopy, 475 (23.8%) suspected malaria cases were positive, of which 57.7% were P. falciparum; 24.6% P. vivax and 17.7% mixed infections. Parascreen and Paracheck were positive for 442 (22.1%) and 277 (13.9%) febrile patients, respectively. For Parascreen, P. falciparum sensitivity was 79.6%, specificity 97.4%, positive predictive value (PPV) 86.9%, and negative predictive value (NPV) 95.6%. For Parascreen, P. vivax sensitivity was 74.4%, specificity 98.6%, PPV 76.3% and NPV 98.4%. For Paracheck, P. falciparum sensitivity was 73.7%, specificity 99.2%, PPV 95.3%, NPV 94.5%. Sensitivity was significantly higher for both tests (P<0.05) when parasite density was >100/microl of blood; in these cases Parascreen was 90.7% and 91.5% sensitive for P. falciparum and P. vivax, respectively, while Paracheck was 87.9% sensitive for P. falciparum. Parascreen thus performed adequately for both P. falciparum and P. vivax compared to expert microscopy and is more useful than Paracheck where microscopy is unavailable.


Abstract

BACKGROUND: Several surveys conducted over a period of 40 years have shown that vitamin A deficiency is a serious public health problem in Ethiopia. To address the problem effectively, up-to-date, comprehensive information on the magnitude and distribution of vitamin A deficiency is needed.

OBJECTIVE: A national vitamin A survey was conducted to assess the national and regional prevalence rates of vitamin A deficiency in Ethiopia.

METHODS: The survey employed a multistage, cluster-sampling approach and a cross-sectional study design. A total of 23,148 children aged 6 to 71 months and their respective mothers were examined for clinical signs and symptoms, and blood samples were collected from 1200 systematically selected children for serum retinol analysis.

RESULTS: The findings indicated national prevalence rates of 1.7% for Bitot's spots among children. 0.8% for night-blindness among children, and 1.8% for night-blindness among mothers. Nationally, 37.7% of children (95% CI, 35.6% to 39.9%) had deficient serum retinol levels, 50.7% had been sick in the previous 15 days, and 22.6% had received vitamin A supplements in the previous 6 months. The prevalence of clinical vitamin A deficiency was significantly (p < .05) higher among children who were male, older, or rural residents.

CONCLUSIONS: The study confirmed that vitamin A deficiency is a serious public health problem in Ethiopia. Intensification of the ongoing vitamin A
supplementation program, postpartum vitamin A supplementation for mothers, intensifying efforts to improve the health status of preschool age children and promotion of production and consumption of fruits and vegetables are recommended.


Abstract

Two HIV-1 subtype C sub-clusters have been identified in Ethiopia (C and C') with little knowledge regarding their biological or clinical differences. We longitudinally monitored HIV-1 viral loads and CD4 (+) T cell counts for 130 subtype C-infected individuals from Ethiopia over 5 years. The genetic sub-clusters C and C' were determined and comparisons were made between the groups. None of the study individuals received antiretroviral therapy. Sub-cluster C' was found to be the more prevalent (72.3%) genotype circulating. Individuals infected with sub-cluster C' harbored higher viral loads in comparison to sub-cluster C-infected individuals when the CD4(+) T cell counts were high (500-900 cells/mm(3)), whereas at low CD4(+) T cell counts (0-150 cells/mm(3)) individuals infected with sub-cluster C viruses showed higher viral loads. We identified a greater number of deaths among individuals infected with sub-cluster C viruses in comparison to C'. Our results indicate that infection with sub-cluster C viruses leads to a more rapid onset of disease, despite the initial lower HIV-1 RNA plasma loads. Additionally, the higher viral loads seen for HIV-1 sub-cluster C' infections at higher CD4(+) T cell counts can help explain the higher prevalence of this subtype in Ethiopia.

2011


Abstract

Objective: To assess the susceptibility/resistance level of Anopheles gambiae s.l. to DDT, Malathion, permethrin and deltamethrin in different parts of Ethiopia.

Methods: Field collected female An.gambiae s.l. was exposed for 1 h to discriminating dosage of 4% DDT, 5% malathion, 0.75% permethrin and 0.05% deltamethrin using WHO insecticide susceptibility test kits and procedures. Knockdown and mortality rates were recorded at 10, 15, 20, 30, 40, 50 and 60 min and 24 h post-exposure respectively.

Results: Anopheles gambiae s.l. was sensitive to DDT only in 2 of 16 localities where susceptibility studies were carried out in northern Ethiopia; it was resistant in 11 sites and potentially resistant in three. To malathion, the test population was
sensitive in four of the six study sites in southern Ethiopia and potentially resistant in the other two sites. In northern Ethiopia, the population was resistant in five localities and sensitive in three. Of the six localities in northern Ethiopia where permethrin was tested, populations were sensitive in three, resistant in one and potentially resistant in two. In southern Ethiopia, the populations were resistant in five of the six sites. Against deltamethrin, the population was sensitive in five of 13 localities, three in northern and two in southern Ethiopia. It was resistant only in two localities, one in northern and one in southern Ethiopia, and potentially resistant in five localities. In eastern Ethiopia at Sabure, the population was sensitive to all insecticides but DDT to which it was potentially resistant.

**Conclusion:** The existence of high level of DDT and pyrethroid resistance with the possibility of cross-resistance to each other and other classes of agricultural pesticides could seriously jeopardise the efficacy of both ITNs and IRS in the country in the future. Insecticide resistance monitoring and surveillance systems as part of a malaria control programme are mandatory for proper management of resistance. The use of a mixture of unrelated insecticides for impregnating nets and rotational use of insecticides for IRS is suggested as a way forward.

---


**Abstract**

**Background:** The standard biomarkers HIV RNA concentration in plasma and CD4+ lymphocyte count are the most important tools in predicting the progression of HIV infected individuals to a state of HIV diseases (AIDS). However, they are not easily available in resource-limited settings.

**Objective:** The aim of this review was to address alternative simple surrogate markers measured hemoglobin, total lymphocyte count (TLC) and body max index (BMI) as prediction tool of HIV infection of AIDS progression by reviewing different studies.

**Methods:** An open search of google.com database was made with search ‘key words’ such as ‘surrogate marker of HIV diseases progress’ with the following inclusion criteria: a) all articles published in English language, b) years of publication between 2002-2010; c) articles limited to the ‘adult’ population.

**Results:** Studies done on other markers to determine HIV diseases progression were excluded. Systematic review was made on 4 cohort, 5 cross sectional, one observational and one retrospective studies on TLC, hemoglobin and BMI predicting progression of HIV disease. The various biomarkers emerging as a result were a mix of hematological, viral, CD4+ and CD8+ cell count, TLC along with BMI. In most of the result there was a good correlation between TLC, hemoglobin of BMI and the standard tools HIV viral load and CD4+ count.

**Conclusion:** Most of the articles show that there is a need to evaluate these simple and cost effective tools and validate them in a large scale study using well standardized laboratories to use them for initiation and monitoring HIV therapy in resource-poor settings.

Abstract

Background: NucliSENS EasyQ HIV v1.1 assay has a performance of linear range between 50 and 3,000,000 HIV RNA copies/ml and it has been used for HIV-1 viral load test in Ethiopia and other countries. Recently a new version of this assay called NucliSENS EasyQ HIV v2.0 is released. The assay is more sensitive with a detection rate of 10 up to 10, 000, 000 HIV RNA copies/ml and has an added advantage to use dried blood spot (DBS) specimens.

Objective: To evaluate the agreement between NucliSENS EasyQ HIV v1.1 and NucliSENS EasyQ HIV v2.0 for determination of HIV-1 RNA concentration in plasma specimen.

Methods: An HIV RNA concentration was made on a total of 25 HIV positive stored plasma specimens using both of the two versions (Biomerieux, france). The HIV RNA concentrations found by version 1.1 were multiplied by 1.74 in order to convert IU/ml into VQA RNA copies/ml in version 2.0 according to the manufacturer’s protocol. Pearson’s correlation and Bland and Altman (after converting RNA copy numbers into logarithmic scale) were used to see the agreement between the two versions.

Results: Of the 25 HIV positive plasma samples, two plasma samples were found to be less than lower detection limit (< LDL) of the assay by both assays and were excluded from the analysis. The rest 23 samples had detectable HIV RNA; 700 HIV RNA copies/ml (2.84 Log 10) -870, 000 HIV RNA copies/ml (2.85 Log 10), [SD=0.82] and 250 HIV RNA copies/ml (2.40 Log 10) up to 1,290,000 HIV RNA copies/ml (6.11 Log 10) [SD=0.88] by NucliSENS EasyQ HIV v1.1 and NucliSENS EasyQ HIV v2.0 respectively. The mean difference in HIV RNA copies was -0.12 Log10. Hence this result and paired t-test indicated that there was no any significant difference between the two kit versions’ mean RNA values (p=0.1525). the viral RNA results found from these 23 specimens by the v1.1 and v2.0 kits were correlated well with correlation coefficient (r²) equals to 0.90 (p&LT; 0.0001). Using Bland and Altman approach, there was 91.3% agreement between the RNA values obtained by v1.1 and v2.0 means, 91.3% of samples’ RNA concentrations were found to be within mean plus or minus two standard deviation (mean+/-2SD).

Conclusion and Recommendation: Based on the results obtained from this study, we can safely conclude that HIV viral RNA measurements by the NucliSENS EasyQ HIV v1.1 and NucliSENS EasyQ HIV v2.0 test kits are related. Additionally as shown in the results by Bland & Altman agreement analysis, it indicates that there is good agreement between the results obtained by the two versions of assays. Therefore we can safely conclude that NucliSENS
EasyQ HIV v1.1 can be replaced by the sensitive assay NucliSENS EasyQ HIV v2.0 and can be used for HIV-1 RNA quantitation of plasma specimens.

405. Desta Kassa, Mekashaw Tebeje, Awas. A, Gebre-Egziabher Gebre-Medihin, Afework Alemu and Tsehaynesh Messele. sICAM-1 and sUPAR as immune markers for treatment response in Ethiopian TB-Patients. ICASA. December 2011.

Abstract

**Background:** WHO-Tropical disease Research/ European Commission joint expert consultation group listed candidate potential biomarkers for HIV infected and non infected TB patients. Soluble intercellular Adhesion Molecule 1 (sICAM-1) and soluble Urokinase Plasminogen Activator Receptor (sUPAR) were among potential host immune markers listed by the group. The current study was aimed to assess the prospective of sICAM-1 and sUPAR as immune markers for treatment response in TB patients with or without HIV in the context of Ethiopia.

**Methods:** This study was part of a large longitudinal study conducted from 2005 to 2010 which was aimed to investigate biomarkers of protection for TB disease in the contest of HIV/AIDS in Africa (GC6-74 cohort project). For this particular study, the study participants were 34 TB+HIV- cases and 52 healthy controls selected from the cohort participants. Plasma levels of sICAM-1 and sUPAR were measured using Quantikine sICAM, R & D systems (USA) and sUPARnostic, ViroGetes (Denmark) ELISAs, respectively at (baseline before start of TB treatment) and 6 months after TB treatment.

**Results:** mean sICAM-1 levels at baseline were 393.8±588.4 ng/ml in TB+HIV+ cases, respectively and 195.9±125.6 ng/ml in healthy controls. After 6 months of TB treatment, these figures were declined to 250.6±147.9 ng/ml and 135.6±176.6 ng/ml in TB+HIV- and TB+HIV+ cases, respectively. On the other hand the mean sUPAR levels at baseline were 10.1±5.9 ng/ml and 18.0±14.2 ng/ml in TB+HIV- and TB+HIV+ cases, respectively and 4±2.8 ng/ml in healthy controls. Similar to sICAM-1 mean sUPAR levels declined to 5.3±2.7 ng/ml and 9.5±7.0 ng/ml in TB+HIV+ cases, respectively. The declines in the levels of both markers after treatment were statistically significant (P-value 0.05).

**Discussion:** Significantly higher levels of both sICAM-1 mean sUPAR were observed in TB patients before start of TB treatment than healthy controls; and significant declines of same markers 6 months after treatment were also observed. This shows the potential of sICAM-1 mean sUPAR as immune markers for monitoring treatment outcome in TB patients irrespective of their HIV status.

**Keywords:** HIV, Immune markers, sICAM-1, sUPAR, TB


[http://ejhd.uib.no/ejhd-v25-no1/61%20The%20pattern%20of%20immune%20and%20virologic%20responses%20to%20highly%20active%20antiretroviral%20treatment_%20.pdf](http://ejhd.uib.no/ejhd-v25-no1/61%20The%20pattern%20of%20immune%20and%20virologic%20responses%20to%20highly%20active%20antiretroviral%20treatment_%20.pdf)

Abstract
Background: Since the advent of HAART, there is a significant reduction in opportunistic Infections (OIs), morbidity, mortality and HIV transmission. However, the low antiretroviral Therapy (ART) coverage in resource-limited countries (42%) and the presence of globally 500-800 thousand patients on first-line having to required switch to second-line drugs in 2010 are some concerns. Other challenges related to HAART include: lifelong therapy, failed treatment response, optimal time to start treatment and switching regimens, drug interaction, toxicity, cardiovascular risks, drug resistance, lost to follow-up, immune reconstitution inflammatory syndrome (IRIS), early mortality, and lack of restoration of solid immunity against HIV. To achieve the goals of ART, national ART programmes focus on the vital patient monitoring systems including clinical, immunologic, virologic, adherence, lost to follow-up and mortality.

Objectives: This review is aimed at addressing the profile of immunovirological responses to HAART and the factors associated with, with a special emphasis on the drawbacks of immunologic assessment to diagnose virologic failures.

Main findings: WHO recommends clinical and immunological assessments as surrogates of plasma viral load (VL) to identify first-line treatment failures in resource-poor settings? However, immunological tools have poor sensitivity (20-30%) and specificity (86-90%) to identify virologic failures that may lead to continue with failed regimen or to unnecessary switch of regimen which could result in a more complex profile of resistance. There are three main types of immunovirologic responders in clinical practice: concordant responders (40-60%), concordant non-responders (12-27.3%), and discordant responders that include lack of CD4+ increases despite viral suppression (7-48%), and optimal CD4+ responses in the absence of viral suppression (5-23.8%), whereby the risk of morbidity and mortality is higher in the concordant non-responders and discordant responders.

Conclusions: ART benefits a substantial number of HIV patients even in resource-poor settings. Since clinicoimmunological assessments have lower performance in diagnosing virologic failures, moving towards the availability of VL testing to confirm treatment failures, if not pre-HAART resistance testing, is a logical and timely approach for resource limited countries like Ethiopia where the long-term effect of the roll-out ART is not well investigated. However, the high cost and technical demand of VL testing, lack of experience of health professionals, weak infrastructure and health care system, the unavailability and high costs of second-line drugs could be the major challenges during expansion of VL testing. Moreover, longitudinal studies on long-term effects of HAART, and surveys focused on transmitted or acquired HIV drug resistance, and Early Warning Indicators are highly pertinent.


Abstract
Dog bites are poorly understood and often underestimated public health problem as it causes huge medico-social problem as these attacks result in millions of
injuries and thousands of deaths all over the world due to risk of rabies transmission. Approximately 1 in 20 dogs bite a human being during the dogs’ lifetime. The present study estimated average annual dog bites to humans and indicate seasonal pattern of the bite in Addis Ababa in the year 2008 and 2009. All data on total, stray and owned dog bites to humans are obtained from human rabies post exposure treatment record of the Zoonoses Diseases Research Team in the Ethiopian Health and Nutrition Research Institute. The data used are all dog bite cases in Addis Ababa of the year 2008 and 2009. A seasonal pattern of dog bites are also analyzed from the same data in the study period. Average annual or seasonal dog bites are expressed as a percentage of total cases, or as a mean ± SD and one-way analysis of variance (ANOVA) was applied for seasonal pattern of dog bites. The X2 test was used to determine the statistical significance between stray and owned dog bites. The average value for dog bites was 1097 ± 0.37/year for stray and 400 ± 1.06/year for owned dogs. In both years injuries caused by stray dogs was higher and significantly differed from injuries caused by owned dogs (t= 33.04, p=0.000). The highest average value of total dog bites was observed in the autumn months in 2008 (146.67 ± 0.89) as well in the autumn months for the two years together 281.67 ± 1.71). Mean of bites are significantly different between seasons in both years together (F=13.95, p=0.000).

Keywords: Addis Ababa, Dog bite, Human, Seasonal pattern.


http://ejhd.uib.no/ejhd-v25-n01/58%20Dog%20bite%20as%20public%20health%20concern%20in%20Addis%20Ababa.pdf

Abstract

Introduction: Animal bites and scratches represent the most important public health issue related to dogs and cats because of the risk of rabies transmission associated with physical, psychological trauma and wound infection.

Objective: The study was aimed at estimating the prevalence of animal bite of human beings in Addis Ababa.

Methods: Data on the kind of animal, age of the patients, gender, site of bites and/or scratch were collected from the registry book and analyzed using SPSS version 11.5.

Results: A total of 1299 cases of bite and/or scratch were reported for the period September 2008 to August 2009. The majority of bites were made by dogs where stray dogs are much higher (X² = 0.83, p= 0.36). There is statistically highly significant difference of bites between sex (p = 0.001) and between age group (F = 5.41, p=0.02). The animal bite made by dogs was higher on legs (55.6 %) followed by hands (26.45 %) and multiple bites (7.51 %).

Conclusions: The majority of bites were attributed to stray dogs followed by cats, horses, donkeys. To reduce the problem a preventative public education is suggested.

Abstract

Background: Directly observed treatment short (DOTS), is an important internationally recommended program element for TB treatment. However, there are a number of information limitations on the effectiveness of the program in our country, Ethiopia.

Objective: To assess the effectiveness of directly observed treatment short (DOTS) course at Gullele Health Center.

Methods: A retrospective cross-sectional study was conducted on 520 patients treated with DOTs course regimen and registered with full information on TB Registration Book using standardized definitions from 2009-2011.

Results: From a total of 520 patients, 350 patients have full data, of which 159 (45.4%) were male and 191(54.6%) were female. Three hundred twenty one (91.7%) patients were newly diagnosed and 29(8.3%) had been treated previously for TB. Hundred and three patients (29.4%) had EPTB, 165(47.1%) smear negative PTB, 77 (22.1%) smear –positive PTB and 5(1.4%) had MDR-PTB. This raised the detection rate to 69.2%. Regarding the treatment outcomes, out of the 350 patients, 232 (66.3%) have completed, 42 (12%) defaulted, 35(10%) cured, 27(7.7%) died, 12(3.4%) transferred out and 2(0.6%) were treatment failed. Therefore the average treatment success rate (cured plus completed) was 267(76.3%). The prevalence rate of MDR-TB in line with DOTs was 0.022/1000 population, among registered. This figure could be most probably due to delayed feedback mechanism from higher health institute.

Conclusion: The well organized registration of TB cases can be useful to understand the epidemiology and the trend of TB in the health care facilities. The defaulter and mortality rate of TB cases were not well decreased as expected. Also the rate of defaulting from treatment was not declined as planned; these are most likely due to the weakness of follow up patients’ adherence and registration, so it needs farther study on representative sample.


Abstract

Many people living in developing countries depend on diets based on cereal staples. Such diets lack diversity, which may result in micronutrient deficiencies. A complementary food made from cereals is often low in mineral content and contains significant quantities of mineral absorption inhibitors like phytic acid and condensed tannins. Anti-nutritional factors are plant constituents, which play an important role in humans, reducing the digestibility of nutrients and the absorption of minerals. Infant malnutrition due to nutritionally inadequate diets is one of the major concerns in
Ethiopia. Children in rural Ethiopia are especially prone to micronutrient deficiencies as they eat from the family dish, which is predominantly plant-based. The main objective of this study is, therefore, to investigate the effect of germination on bioavailability of minerals of sorghum-based complementary foods. Two varieties of sorghum (*Sorghum bicolor* (L.) Moench) grains (varieties 76T1#23 and Meko) were collected, cleaned, soaked for 22 hours at room temperature (22±2°C) and germinated for 36 and 48 hours at the soaking temperature. The germinated seeds were dried at 55°C for 24 hours and the ingeminated sorghum seeds were also dried at 55°C for 2 hours to facilitate milling. Both ingeminated and germinated sorghum grains were milled into a homogeneous fine powder. Germination of sorghum grains for 36 and 48 hours decreased phytic acid levels (mg/100g) significantly (*p<0.05*) for variety 76T1#23 from 399.12 to 255.66 and 190.11, and from 464.94 to 293.18 and 203.76 for variety Meko, respectively. During germination of sorghum grains for 36 and 48 hours, molar ratio of phytate: iron was decreased significantly (*p<0.05*) from 4.12 to 2.06 and 1.35 for variety 76T1#23, and from 5.49 to 2.35 and 1.58 for variety Meko, respectively. Similarly, germination of sorghum grains for 36 and 48 hours decreased significantly (*p<0.05*) phytate: zinc molar ratio of sorghum flour from 21.18 to 12.76 and 9.31 for variety 76T1#23; and from 25.72 to 15.54 and 10.64 for variety Meko, respectively. In contrast, germination of sorghum grains for 36 and 48 hours increased significantly (*p<0.05*) the contents of total phosphorus, non-phytate phosphorous, iron, zinc and calcium. Hence, germination appeared to be a promising food processing method to improve bioavailability of minerals and to decrease phytate levels, and therefore to decrease deficiencies of minerals in infants.

**Key words**: Germination, Anti-nutritional factors, Mineral bio-availability


**Abstract**

**Aim of the study:** *Ocimum lamiiifolium* Hochst. ex Benth. (Lamiaceae) has been used in Ethiopian traditional medicine for the treatment of different inflammatory disorders such as oropharyngitis, wound, pain, fever, and others. However, its use has mainly been based on empirical findings. Thus the objective of this study was therefore to evaluate the antiinflammatory effects and acute oral toxicities of the leaf extracts of *Ocimum lamiiifolium* in mice.

**Materials and methods:** Aqueous and ethanol crude extracts were screened for their antiinflammatory activities in mice using carrageenin induced paw edema. And then the aqueous extract, the most active extract, was further fractionated and the fractions were tested for their anti-inflammatory activities using carrageenin, histamine and serotonin induced mice paw edema. Distilled water and aspirin were employed as negative and positive controls, respectively. Acute oral toxicity of both extracts and fractions were also determined after giving graded doses.

**Results:** The aqueous and ethanol extracts were able to reduce inflammation significantly, but greater anti-inflammatory activity was observed for the aqueous extract at all dose levels. Of all fractions the water residue showed highly significant anti-inflammatory activity.
Conclusions: Ocimum lamiifolium leaf extracts exhibited significant anti-inflammatory activities with less acute toxicity.


Abstract
Crude and column chromatographic fractions of methanol leaf extract of Jatropha curcas were tested for their larvicidal activities against laboratory reared late third instar larvae of Anopheles Arabiensis. Crude methanol leaf extract of J. curcas had similar larvicidal activity to 0.5 ppm Temephos (positive control) at test concentrations ranging from 125 -1000 ppm while column chromatographic fractions (F1 and F2) of the crude methanol leaf extract of J. curcas showed similar larvicidal activities to 0.5 ppm Temephos at 62.5 and 125 ppm test concentrations. Column chromatographic fraction three (F3) showed similar larvicidal activity to 0.5 ppm Temephos at 125 ppm test concentration. The LC50 and LC90 values of crude methanol leaf extract of J. curcas were found to be 92.09 and 241.09 ppm, respectively. Toxic activities of column chromatographic fraction one (F1) (LC50=28.65 ppm; LC90 = 49.20 ppm) were nearly equal to that of column chromatographic fraction two [F2] (LC50= 30.40 ppm; LC90 = 49.80 ppm). Least toxicity on the test larvae was observed by column chromatographic fraction three [F3] (LC50 = 80.70 ppm; LC90 = 123.70 ppm). Thus, the larvicidal activity of crude methanol leaf extract was not due to the synergistic effects of its fractions. Further studies are recommended to identify larvicidal active ingredients from the active column chromatographic fractions of crude methanol leaf extract of J. curcas.

Key words: Malaria vector control, Anopheles arabiensis, Botanical larvicides J. curcas

Abstract

Properly functioning laboratory equipment is a critical component for strengthening health systems in developing countries. The laboratory can be an entry point to improve population health and care of individuals for targeted diseases - prevention, care, and treatment of TB, HIV/AIDS, and malaria, plus maternal and neonatal health - as well as those lacking specific attention and funding. We review the benefits and persistent challenges associated with sustaining laboratory equipment maintenance. We propose equipment management policies as well as a comprehensive equipment maintenance strategy that would involve equipment manufacturers and strengthen local capacity through pre-service training of biomedical engineers. Strong country leadership and commitment are needed to assure development and sustained implementation of policies and strategies for standardization of equipment, and regulation of its procurement, donation, disposal, and replacement.