

Ethnopharmacology of single herbal preparations of medicinal plants in Asendabo district, Jimma, Ethiopia

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Medicinal plants have been used to prevent and treat various health problems. Several African and Asian nations are now encouraging traditional medicines as an internal component of their public healthcare programmes. Indigenous medicines are relatively inexpensive and locally available and readily accepted by local population. Ethiopia has an enormous resource of plant species that are used in traditional medicine. Among the 7,000 higher plant species that are known to exist, about 800 of them are employed in the traditional healthcare and 60% of plants are said to be indigenous with their healing potential. Majority of Ethiopians depend on medicinal plants as their only source of healthcare. Vast knowledge on the traditional uses of these plants is not fully documented and most of the knowledge is conveyed from one generation to the next generation through words of mouth. The survey conducted during February-May 2006 was undertaken to explore the traditional systems of medicine in Asendabo region of Ethiopia.

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Majority of the people still rely on traditional medicine (TM) for their everyday healthcare needs. People, who use traditional remedies, may not understand the scientific rationale behind their medicines, but they know from personal experience that some medicinal plants can be highly effective if used at therapeutic doses¹. People believed that plant remedies used for medication are less toxic than modern medicines². In sub-Saharan Africa, thousands of kilograms of medicinal plants are collected and used by healers for treatment of different human and live stock diseases³. Ethiopian TM is composed of a number of skills such as use of plants, animal products and minerals as well as magic and suppression. It is also true in urban population, for instance, in Addis Ababa, where modern health service is relatively better, a significant percentage of the population has been using TM. Social belief and various socio-cultural reasons in Ethiopia made majority of the people continue to rely on indigenous remedies. The indigenous knowledge about many of medicinal plants has justified its existence by the biomedical benefits that have been established

through observations of generations of people. This is demonstrated by the history of modern drug discovery from plants, which were employed in TM in other countries such as China and India⁴. Ethiopia has an enormous resource of plant species that are used in TM. Among the 7,000 higher plants species that are known to exist, about 800 of them are employed in the traditional healthcare and 60% of plants are said to be indigenous with their healing potential^{4,5}. Majority of Ethiopians depend on medicinal plants as their only source of healthcare especially in rural areas. Provision of modern healthcare through the construction of new hospitals, health centers and health posts, imported drug supplies and training of doctors and nurses are of little value at present time to the majority of the rural population. Medicinal plants and knowledge of their use provide a vital contribution to human and live stock health needs through out the country⁶. The increasing demand by the industrial courtiers for herbal remedies has put increasing pressure on the supply of raw materials available in developing countries. The enormous demand for medicinal plants is generally met by indiscriminate harvesting of the natural flora. As a result, many useful indigenous plant species are,

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therefore gradually disappearing due to deforestation and over consumption. Like many other countries, cultivation of medicinal plants is not yet widely practiced in Ethiopia. This scarcity of medicinal plant species compels traditional healers to go long distance for collection⁷.

Vast knowledge on the traditional uses of these plants is not fully documented and most of the knowledge is conveyed from one generation to the next generation through words of mouth, especially in countries like Ethiopia. The danger of losing valuable information is thus high considering the increasing acculturation, mobility and displacement of communities due to several factors. Moreover, traditional healers have passed on their knowledge only to the members of their own family or apprentice considered to be *elect* under *oath* this practice of secretive transfer of information accompanied with the negligence of contemporary generation due to expansion of modern education and to some extent modern medicine has left traditional healers in a condition, where they could hardly find successors⁸. Like many other Ethiopians, the Asendabo people use medicinal plants for their primary healthcare. Ethnopharmacologically, these people have remained unexplored and there is no comprehensive accounting of their traditional medicinal practices. As it is happening elsewhere in the country, both the traditional knowledge and plants utilized by these people are under threat due to the aforementioned reasons. The modes of therapy of these herbal remedies are based on empirical findings. Natural products and their derivatives represent more than 50% all the drugs clinically used in the world and higher plants contribute not less than 25% of the total natural products⁹. A survey of medicinal plants in Indonesia was done in three tribes and 182 medicinal plants were collected for 45 health problems in *Melayu* tribe, 110 in *Talang Mak* for 58 cases and 101 medicinal plants for 54 cases in *Anak Dalam* tribe. The leaves are mostly used for the preparation of remedies and deliver the active ingredients. Usually, the leaves are boiled with water and taken orally, accounting for 199 traditional medicinal plants¹⁰. Eighty percent of *Mali* population used traditional medicinal plants as their only source of medicine. The majority of the remedies were prepared in the forms of decoction that account (65%), followed by infusion (13%) in which powders are used and maceration (11%), where roots are employed for

preparation. Also, it was reported that most of the remedies were taken orally¹¹. Thus, the study carried out during February-May 2006, was undertaken to study important medicinal plants used as single herbal prescription in Asendabo district of Southwest Ethiopia.

Methodology

Asendabo district is one of the districts in Jimma Zone; 50 km away from Jimma town and 291 km Southwest of Addis Ababa. It has 9 *kebeles* with total area of 1,589.4 km²; four climatic zones, wurch (0.03%), dega (23.4%), woyna dega (62.72%) and kola (13.8%), with the altitude ranging from 880-3,344 m above sea level; annual rainfall ranging from 900-6,000mm and temperature ranging from 27-32°C. The topography consists of mountains (12%), hills (20%) and plains (68%). Fifteen percent of area is covered by forest and 85% is used for agriculture¹². The study was conducted to document indigenous Knowledge on medicinal plants. A structured questionnaire was used to collect ethnopharmacological information from healers. All healers in the district were included in the survey. The healers were identified with the help of community leaders and administrators of the *kebeles*. The ethnopharmacological study was conducted among the healers about their knowledge on the medicinal plants and mode of practice by using a well-structured questionnaire (prepared in English and translated to Amharic). Components of the questionnaire included, socio-demographic data, diseases treated by the healers, years of experience source of knowledge, information on medicinal plants (plant parts, habitat, methods of preparation, etc.). Specimen of the medicinal plants were collected, identified and documented. The quality of data was assessed by checking the performances of data collectors in filling questionnaires. Moreover, the healers were interviewed twice in order to get more reliable information. In addition, the principal investigator (PI) visited some of the healers to be sure on the interviewers' responsibility.

Results and discussion

The socio-demographic characteristics of traditional healers are presented (Table 1). In the survey, a total of 40 medicinal plants were collected. The identified species were distributed in 42 families of which Solanaceae, Antiraceae, Euphorbiaceae, Labiatae, Ranunculaceae, Rutaceae, Verbenaceae, and Acanthaceae were the major families used for herbal

preparation (Table 2). Out of 40 types of herbal remedies, some remedies had adverse effects; the most commonly occurring were nausea, vomiting, gastrointestinal discomfort, diarrhoea and fever. Some remedies were contraindicated for pregnant and nursing women. The family members were the major source of the indigenous knowledge in this district, like other study conducted in Jimma zone as the healers kept the knowledge as secret with in the family members. Most of the remedies were derived from plants sources, but modern drugs and minerals were not yet used as a source of medicine⁹. A study in Butajira indicated that 17.4% herbal medicines and 82.4% modern medicines were used for the treatment of different illness². Most of the medicinal plants utilized in this area were harvested from the wild source as in many parts of the country. A study done on Zay people also indicated that most plants were harvested from wild sources and only 6 types of species are under cultivation⁸. Harvesting from wild source decreases the supply of medicines and leads to destruction of potential medicinal plant species. The

Table 1–Socio-demographic characteristics of traditional healers in Assendabo district

Background characteristics		Frequency	Percent
Sex	Male	7	63.6%
	Female	4	36.3%
Age	30-39	2	16.6%
	40-49	5	41.6%
	50-59	3	25%
	≥60	2	16.6%
Ethnicity	Oromo	6	42.8%
	Dawaro	2	16.6%
	Amhara	4	28.5%
Religion	Kullo	1	7.14%
	Muslim	8	72.7%
Educational status	Christian	3	27.2%
	Illiterate	7	38.8%
Occupational status	Church education	5	27.7%
	Literacy campaign	3	16.6%
	Grade 1-6	2	11.1%
	Grade 7-8	1	5.5%
Years of experience	Farmers	10	62.5%
	Merchant	5	31.25%
	Government employee	1	6.25%
Years of experience	5-10	4	28.57%
	11-15	2	14.28%
	16-20	5	35.75%
	24-25	2	14.28%
	≥25	1	7.14%

most widely sought after the plant parts in the preparation of remedies in the area was leaf. Collecting of leaves do not pose great danger to the existence of an individual plant when compared with the collection of underground parts. According to a study conducted in Shirka district, roots were highly used for herbal preparation⁷.

Most of the reported preparations in the area were prepared from freshly collected juice. Other study conducted in Jimma zone reported that 62% of the remedies were prepared by boiling. Preparing plant remedies by crushing or pounding is more advantageous than using decoction or concoction, since heat could affect the active constituents of the remedies. Majority of the reported preparations in the area were drawn from a single plant and mixtures were used rarely. In a study in Seka Chekorsa, 33 prescriptions had polyherbal while 20 were prepared from single plant species. The use of mixture of plant species in treating particular ailment would be for synergic interaction or potentiation effect of one plant on the other⁵. Most of the remedies in the area were administered through oral route (Fig. 1). In another study conducted in Jimma zone, oral route was found to be the major route of administration⁸. In the survey, water was the most commonly used additive in the preparation of remedies (Fig. 2). Other additives such

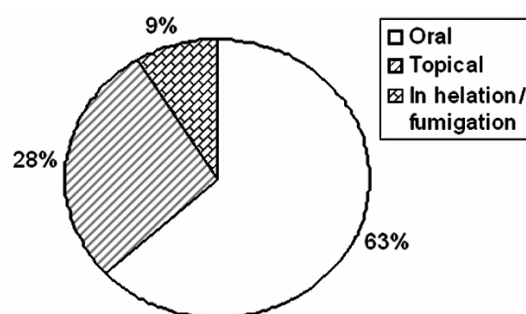


Fig. 1–Administration of plant remedies

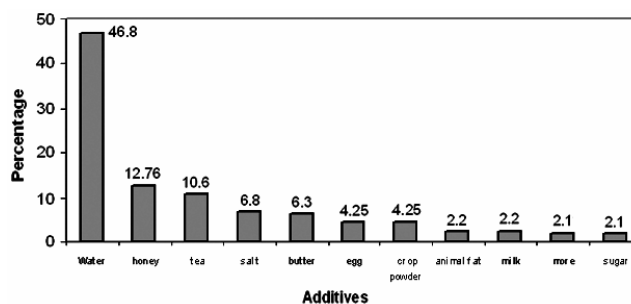


Fig. 2–Additives used in preparation of remedies

Table 2—Plants used as single herbal prescription in Asendabo district

Local name	Plant name	Family	Indications	Uses
<i>Reje</i> ^o	<i>Veronica auriculifera</i> Hein	Asteraceae	Chancroid (1) Wound (2)	Filtrate of plant paste in water is drunk. Leaf juice is applied on the wound.
<i>Armagusa</i> ^o	<i>Ajuga integrifolia</i> Ham. Buch	Lamiaceae	Diarrhoea (3), Jaundice (<i>ye'mariyam-mekent</i>) (2)	Whole plant hot water filtrate is drunk.
<i>Dumuga</i> ^o	<i>Justilia schimperand</i> (Hochst ex Nees) T. Alnder.	Acanthaceae	Goha-besheta (1)	Fresh leaf juice is taken; the residue is rubbed on the genitalia.
<i>Kelala</i> ^o	<i>Stephania abyssinica</i> (Dillonet A. Rich) Walp	Menispermaceae	T. Corporise (1)	Plant paste is applied on whole body.
<i>Catto</i>	<i>Albizia schimperiaha</i> Oliu.	Fabaceae	Facial fungus (chirete) (2)	Dried powdered leaves mixed with butter are applied on affected area.
<i>Papaya</i> ^A	<i>Carica papaya</i> Linn.	Caricaceae	Amoeba (3), giardia (3), Malaria (6)	Seed paste mixed with honey is taken. Fresh leaves are soaked in warm water; filtrate is taken.
<i>Kobbo</i> ^o	<i>Ricinus communis</i> Linn.	Euphorbiaceae	Amoeba (2)	Fresh root is pulverized, mixed with garlic and honey is taken. Seeds are chewed and swallowed.
<i>Ye'mariyam</i> ^A <i>mekent</i>	—	—	Jaundice (2)	Dried leaves are pounded and the powder dispersed in cup of tea is taken.
<i>Baruda</i> ^o	—	—	Tonsillitis (2)	Fresh roots are chewed and juice is for used as gargle.
<i>Harbu</i>	<i>Ficus surforesee</i>	Moraceae	Eczema (<i>chiffa</i>) (2)	Fresh latex of are applied on the affected parts.
<i>Damakese</i> ^A	<i>Ocimum lamiiifolium</i>	Labiatae	UV-skin reaction (<i>mitchi</i>) (4)	Leaves are soaked in warm water; filtrate is taken; vapour is used for fumigation.
<i>Ye'seythen kill</i> ^A	<i>Lagenarin abyssinica</i> (Hoof.f) c. Jeffery.	Cucurbitaceae	Epilpsy (<i>ye'methele besheta</i>) (2)	Leaf juice is applied to nose; the residue is rubbed on the nose.
<i>Lagiya</i> ^o	—	—	Tuberculosis (<i>ye'sameba-nekersa</i>) (2) Rabies (<i>ye'wusha beshea</i>) (2)	Dried root powder dispersed into cup of tea is taken. Dried root powder mixed with barley powder and water is made into moist mast.
<i>Botetesa</i>	—	—	Haemorrhoid (<i>Kintarote</i>) (3)	Fresh root paste mixed with honey is taken.
<i>Mareyata</i> ^A	<i>Dodonea angustifolia</i> L.f.	Sapinaceae	(<i>Madiate</i>) (2)	The plant is pounded and applied on the face.
<i>Oumugulian</i>	—	—	Gonneria (<i>Chebete</i>) (1)	Dried seed powder dispersed in water is taken.
<i>Hidda</i> ^o	<i>Clematis hirsute</i> perr and Gull	Ranunculaceae	Amoeba (2)	Dried seed powder dispersed in water is taken.
<i>Zingible</i> ^A	<i>Zingiber ofifcinal</i> Ross	Zingiberaceae	Abdominal cramp (<i>Hode-kurthet</i>) (3)	Fresh rhizomes are pounded and macerated in warm water; filtrate is aken.
<i>Shenfa</i> ^o	<i>Lepidium atvuim</i>	Cruciferceae	Renal diseases (1)	Powdered seeds mixed with honey are taken.
<i>Oricha-ferengy</i> ^o	—	—	Gonorrhoea (1)	Dried seed powder dispersed in water is taken.
<i>Chkugn</i> ^o	<i>Artemisa abyssinica</i> Schtz Bipex Rich	Compositceae	Evil eye (2)	Dried seed powder dispersed in tea is taken.
<i>Tufo</i> ^o	<i>Ageratum conyzoides</i>	Asterceae	Eipithaxis (<i>ye'ne ser</i>) (3)	Leaf paste is applied on nose.
<i>Ludetta</i> ^o	—	—	Goitor (1)	Fresh plant juice is taken; residue is rubbed on the neck.
<i>Dechi Merecha</i> ^o	—	—	Evil eyes (2) (<i>ye'buamedanite</i>)	Fresh leaf juice diluted with water is taken.
<i>Ye' feres-zeng</i> ^A	<i>Otostegia integrifolia</i> Benth	Lamiaceae	Ascaris (1)	Powdered dried root juice is taken.

Contd.

Table 2—Plants used as single herbal prescription in Asendabo district—*Contd.*

Local name	Plant name	Family	Indications	Uses
<i>Ye' mider enboyi</i> ^A	<i>Cucumis ficifolius</i>	Solanaceae	<i>Ya' menmene besheta</i> (1)	Dry powdered roots mixed with cow milk is taken.
<i>Tarigum</i> ^o	—		Epilepsy (1)	Fresh pounded leaves and roots infused in water for 7 days are taken.
<i>Ketininna</i> ^o	<i>Verbascum siniaiticum</i> Benth.	Scrophulariaceae.	" <i>Mister ye'meyasewota</i> " (1)	Fresh flower juice is applied on the forehead as a symbol of class.
<i>Ye'shankila</i> ^A <i>medhanit</i>	—		Wound (2)	Fresh leaf juice is taken.
<i>Attuch</i> ^A	<i>Verbena officinalis</i> L.	Verbenaceae	<i>Hode- kurtete</i> (4) Amoeba (3) Back pain (3)	Fresh leaves are chewed with salt and juice is taken.
<i>Emboyi</i> ^A	<i>Solanum incanum</i>	Solanaceae	Epitasis (3)	Powdered leaves are applied into nose.
<i>Anchabi</i> ^o	<i>Calpurna ourea</i> (Ait.) Benth	Fabaceae	Headache (1)	Pounded leaves are lighted with fire and the smoke is inhaled.
<i>Bottoro</i> ^o	—		Snake bite (1)	Stem is paste is dispersed in water for drink.
<i>Kuttia</i> ^o	—		Gonorrhoea (<i>chebite</i>) (1)	Leaf juice is taken.
<i>Bissana</i> ^A	<i>Croton macrostachys</i>	Euphorbionceae	T. corporise (3) Wound (2) Amoeba (1) Blood coagulant (1)	Fresh leaf latex is applied on the affected area. The apexes of the plants are soaked in warm water; filtrate is taken
<i>Kinin zafe</i> ^A	—		<i>Hode kurthet</i> (2) Toothache (2)	Fresh leaf juice is poured into tea is taken
<i>Tosegn</i> ^A	<i>Thymus serrulatus</i>	Labiatae	Renal diseases (5) Hypertension (1) T.capities (1)	Fresh leaves are soaked with warm water; filtrate is drunk. Fresh leaf juice is applied on head.
<i>Wanza</i> ^A	<i>Cordia faricanalam</i>	Boraginaceae	T.capies (2)	Fresh apex of plant is squeezed; juice is applied on head.
<i>Berbera</i> ^A <i>Asaabella</i> ^o	<i>Capsicum annum</i> L.	Solanaceae	Burn wound (2) Skin diseases (2)	Fresh leaf juice is applied to the affected area. Fresh seed juice is taken; residue is rubbed on skin.
<i>Edndod</i>	<i>phytolacca dodecandra</i> L. Herit	Phytolaccaeae	Eczema (3)	Fresh leaf and flower juice is applied on the affected area.

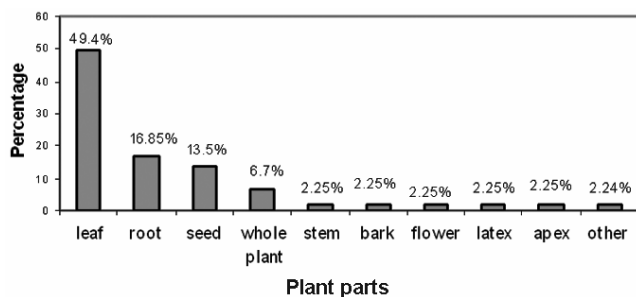


Fig.3—Plant parts used as a source of medication

as honey, sugar, tea and salt were used as sweeteners to modify the taste of the remedies; butter and animal fats were used as a base (carrier) in the formulation of topical preparations. Most of the remedies had no measurement of dose and due to this different dose dependant adverse effects were seen. The most widely sought after plant part for preparation of remedies in

the area was leaves followed by roots and seeds (Fig. 3). Majority of the remedies were prepared in form of juice from freshly collected plant parts. The majority of the preparations were of fresh plants and few remedies were prepared from dried and grounded plant parts. Most of the remedies were administered orally followed by topical application and inhalation/fumigation. Water was the most commonly used additive followed by honey, tea, salt and butter in preparation of remedies. Most of the remedies had no measurement of dose whereas some were measured by use of cups.

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