

Ethnobotanical Study of Traditional Medicinal Plants in Gindeberet District, Western Ethiopia

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Abstract Ethiopia, is a country characterized by a wide range of climate and ecological conditions, possesses enormous diversity of fauna and flora. Semi-structured interviewees, observation and guided field walks with informants were employed to obtain ethnobotanical data in Gindeberet district, western Ethiopia. A total of 120 informants (84 males and 36 females) were selected purposefully from six sub districts. A total of 26 species of medicinal plants were collected and identified for treating 36 human ailments. The medicinal plant preparations were administered through oral, dermal and nasal routes. Oral application (33 preparations, 67.3%) was the highest and most commonly used route of application followed by dermal application (15 preparations, 30.6%). The most commonly used plant parts for herbal preparations were leaves (28%) and roots (28%) followed by barks (14%) and fruits (14%). Gindeberet district is rich in its medicinal plant composition and the associated indigenous knowledge. Encouraging the local herbal medicinal practitioners to enhance the use of traditional medicine and licensing the work of the practitioners are recommended.

Key words: Ethnobotany, medicinal plants, traditional healers, Gindeberet

Introduction

Ethiopia, is a country characterized by a wide range of climate and ecological conditions, possesses enormous diversity of fauna and flora (Pankhurst, 2001). The country possesses a wide range of potentially useful medicinal plants, more extensive indeed than available in many other parts of the world. Popular knowledge of plants used by humans is based on thousands of years of experience. By "trial and error", people learnt how to recognize and use plants, including those with a magic-religious function. In Ethiopia, even though the traditional medical practitioners are the best sources of information about the knowledge of the medicinal plants, it was found very difficult to obtain their traditional medicinal information as they considered their indigenous knowledge as a professional secret, only to be passed orally to their older son, at their oldest age (Jansen, 1981). However, the local indigenous knowledge on medicinal plants is being lost at a faster rate with the increase of modern education, which has made the younger generation to underestimate its traditional values. In addition the increase in population growth rate would result in the intensification of agriculture in marginal areas which would lead to deforestation with decrease in number or loss of medicinal plants in the wild (Phankhurst, 2001). Dawit (1986) estimated that 95% of traditional medical preparations in Ethiopia are of plant origin. Medicinal plants are the base for the development of new drug and the survival of till human kind as well as other livestock.

In Ethiopia little emphases has been given to traditional medicinal studies over the past decade (Debella, 2001). There for it can be said that ethno botanical studies are merely at the start in Ethiopia through there have been some attempts in investigating medicinal plants uses and there is as yet no in depth study on the relation between medicinal plants and indigenous knowledge on sustainable management of such plant resources. Modern healthcare has never been and probably never will provide for the foreseeable future adequate and equitable health service anywhere in Africa, due to the financial limitations related to rapid population growth, political instability and poor economic performance (Anokbonggo, 1992).

Due to incomplete coverage of modern medical system, shortage of pharmaceuticals and unaffordable prices of modern drugs, the majority of Ethiopian still depends on traditional medicine. The problem of ensuring the equitable distribution of modern healthcare has become more serious, as the gap between

supply and demand has continued to widen. According to Sebsebe and Ermias (2001), there is a considerable global interest in tapping the accumulated knowledge of traditional medicine, and therefore, researches are being carried out in many countries with the aim of increasing the use of traditional medicine to the welfare of the human population. The same document also explains that basic and applied researches on medicinal plants are interconnected and the basic research is primarily important in realizing new knowledge and serving as bases for applied research.

Study Area

The study was conducted in Gindeberet district within the Oromia regional state of Ethiopia located at about 270km from Addis Abeba, the capital city of Ethiopia. The district had an elevation ranging from 1400-2800 m.a.s.l. with an average annual rainfall of about 1700-2000 mm and the mean maximum temperature ranges between 20° C and 26° C. Our studies focused on the sub-districts Mudhii, Kaachisii, Harbu Guba, Bidaru Gobata, Haroo Berbaboo and Mukadiiima.

Methods

Based on methods given by Gidey (2010), semi-structured interviewees, observation and guided field walks with informants were employed to obtain ethnobotanical data. For this study purposive sampling was employed to identify potential informants. According to Storck *et al.* (1991), the size of the sample depends on the available fund, time and other reasons and not necessarily on the total population. Accordingly, a total of 120 informants (84 males and 36 females) were selected purposefully with the help of local administrators and local elderly people from six sub districts of the Gindeberet district (Table 1). Recommended traditional medicine practitioners were identified as potential informants and subsequently participated in personal interviews. Interviews were based on a checklist of questions prepared before hand in English and translated to the local language (Afan Oromo). Information regarding local names of medicinal plants, methods preparation, part(s) used, diseases treated, dosage used and route of application was recorded at the spot. Observations were made on the morphological features and habitats of each medicinal plant species in the field. Based on ethnobotanical information provided by informants, specimens were collected, numbered, pressed and dried for identification and plates of each traditional medicinal plant were collected. Identification was done in the field as well as by comparison with authentic specimens, illustrations and taxonomic keys.

Table 1 Sample respondent selection in Gindeberet district, Oromia Western Ethiopia

Sub districts	Population			Sample taken			
	M	F	Total	M	F	Total	%
Mudhii Baroo	360	392	752	14	6	20	2.65
Kaachisii	345	298	643	14	6	20	3.10
Harbu Guba	375	225	600	14	6	20	3.33
Bidaru Gobata	261	194	455	14	6	20	0.43
Haroo Berbaboo	380	295	775	14	6	20	0.25
Mukadiiima	296	244	540	14	6	20	3.70
Total	2017	1748	3765	84	36	120	13.46

Note: M-male, F-female

Results

The gender distribution of traditional healers was 84 (70%) and 36 (30%) for males and females, respectively and 50% were illiterate. Most of traditional healers were married (50.8%) and 71.7% were older than 46 years (Table 2). A total of 26 species of medicinal plants were collected and identified for treating 36 human ailments (Table 3). The medicinal plant preparations were administered through oral, dermal and nasal routes. However, oral application (33 preparations, 67.3%) was the highest and most commonly used route of application followed by dermal application (15 preparations, 30.6%) (Table 3). The most commonly used plant parts for herbal preparations in the area were leaves (28%) and roots (28%) followed by barks (14%) and fruits (14%). 72.5% of the healers were rural residents (Table 3).

Discussion

Plant diversity remains indispensable for human well being in providing a significant number of traditional and modern remedies required in healthcare. Indigenous people in Ethiopia by large employed plant based traditional medicine to get cured from different ailments. Nearly 80% of the Ethiopian population still relies on plants to prevent and cure various health problems (Dawit and Ahadu, 1993) because of lack of certain infrastructures like hospitals and health centers. In the present study most of the traditional healers were rural residents. This is partly because modern medicinal services are either unaffordable or unavailable to the vast majority of the rural people due to their skyrocketing cost coupled to lack of transport to and from health care centers. The use of traditional medicine is still wide spread in Ethiopia, and its acceptability, availability and popularity is no doubt as about 90% of the populations use it for health care needs (WHO, 2002). According to Konno (2004), easy accessibility, efficacy on treatment and affordable cost in getting health services are main reasons in preferring traditional medicine to modern medication. Medicinal plants are the main, often only source of traditional medicine for the rural population and are of high demand in the health care systems of this population when compared to modern medicine. Traditional healers were found to play an important role in the primary health care system of the rural people as they treat resource people who had little access and could not afford the cost of modern medication.

The study revealed that majority of the traditional healers were older than 46 years. Very few youths were involved in the sale and administration of herbs in the study area. In Ethiopia, it is very difficult to obtain their traditional medicinal information as they considered their indigenous knowledge as a professional secret, only to be passed orally to their older son, at their oldest age (Jansen, 1981). Derogatory attitudes towards traditional medicine practitioners had forced healers to keep their knowledge and practices to themselves. The distribution of knowledge and services of medicinal plants are hierarchically placed. Most of the traditional healers are males and are married. This showed that they have family to support with the income realized from the sale and administration of the herbs.

Oral application was the highest and most commonly used route of application followed by dermal (Table 3). Dawit and Ahadu (1993) indicated oral as the main route of application used in northern Ethiopia, which accounted for 42%. Moreover, this is in agreement with the result of various ethnobotanical researchers elsewhere in Ethiopia (Kebu *et al.*, 2004; Ermias, 2005; Fisseha, 2007 and Gidey, 2010). Both oral and dermal routes permit rapid physiological reaction of the prepared medicines with the pathogens and increase its curative power (Fisseha, 2007). Majority (94%) of these preparations are drawn from mixtures of different plant species with different additive substances like honey, butter, oil, milk, salt, bread etc (Table 3) for the treatment of single ailment. Similar result was also reported elsewhere (Mirutse, 1999; Bayafers, 2000 and Fisseha, 2007). Dawit (1986) has also identified the additive substances in herbal remedy preparations with their possible benefits. The most commonly used plant parts for herbal preparations in the area were roots and leaves. Previous reports in Ethiopia have shown that leaves were the most commonly used and followed by roots to treat various health problems (Bayafers, 2000 and Mirutse, 1999). High threat to the

mother plant comes with root, bark and stem harvest. Medicinal plant harvest that involves roots, rhizomes, bulbs, barks and stems have serious effect on the survival of mother plants (Dawit and Ahadu, 1993). Traditional medicinal plants were harvested mainly for their leaves and roots. Twenty six species of medicinal plants were collected and identified for treating 34 human ailments. The mode of administration was mainly through oral and dermal. Gindeberet district is rich in its medicinal plant composition and the associated indigenous knowledge. Encouraging the local herbal medicinal practitioners to enhance the use of traditional medicine and licensing the work of the practitioners are recommended. Local peoples' indigenous resources should be maintained.

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Table 2 Background characteristics of respondents

Items	Alternatives	Count	Percentage
Sex	Male	84	70
	Female	36	30
Age	26-35	17	14.2
	36-45	17	14.2
	46-55	33	27.5
	>56	53	44.2
Religions	Protestant	53	44.2
	Ethiopian Orthodox	67	55.8
Residence	Rural	87	72.5
	Urban	33	27.5
Education status	Illiterate	60	50
	1-4	33	27.5
	5-8	13	10.8
	9-12	14	11.7
Marital status	Single	29	24.2
	Married	61	50.8
	Divorced	16	13.3
	Widowed	14	11.7

Table 3 List of medicinal plants, diseases treated, ingredients added, parts used and rout of administration of remedies

Medicinal plants	Diseases treated	Ingredients added	Parts used	Method of administration
<i>Brucea anti dysenteriae</i>	Dysentery Snake bite Tooth ache Jaundice	Honey Butter Butter None	Fruit Leaf Bark Fruit	Oral Dermal Oral Oral
<i>Calpurnia aurea</i>	Eye disease Snake bite Vomiting Stomach	Leaf Milk None None	Leaf Leaf Root Bark	Dermal Oral Oral Oral
<i>Justicia schimperiana</i>	Gonorrhoea Malaria Rabies Headache	<i>Croton macrostachyus</i> None <i>Brucea antidysenterica</i> None	Leaf Leaf Leaf Leaf	Oral Oral Oral Oral
<i>Acacia mellifera</i>	Sexual incompetence of male	Root and barks of <i>Amaranthus cruentus</i>	Root	Oral
<i>Croton macrostachyus</i>	Skin disease	<i>Hagenia abyssinica</i>	Fruit	Dermal
<i>Embelia schimperi</i>	Tape worm	None	Fruit	Oral

<i>Allium sativum</i>	Closed wound Cold Cough Headache Malaria Skin disease Sour throat	None Honey Honey Oil <i>Girardinia diversifolia</i> <i>Girardinia diversifolia</i> None	Bark Bark Root Bark Root Root Bark	Dermal Oral Oral Dermal Nasal Dermal Oral
<i>Hagenia abyssinica</i>	Tape worm	Water	Leaf	Oral
<i>Lepidium sativum</i>	Male heart ache	<i>Schinus molle ginger</i> Honey	Seed	Oral
<i>Catha edulis</i>	Skin disease	Honey	Seed	Oral
<i>Citrus auratifolia</i>	Inflammation of lung	None	Root	Oral
<i>Phytolacca dodecandra</i>	Abortion Anthrax Itchy	<i>Apodytes dimidiata</i> <i>Apodytes dimidiata</i> <i>Apodytes dimidiata</i>	Root Root Root	Oral Oral Dermal
<i>Ricinus communis</i>	Cold Dysentery Itchy	Water Water Oil	Root Root Root	Oral Oral Oral
<i>Dodonaea angustifolia</i>	Tape worm	Salt	Leaf	Oral
<i>Ekebergia capensis</i>	Cold	Salt	Leaf	Oral
<i>Eucalyptus globulus</i>	Skin diseases	None	Leaf	Dermal
<i>Capparis tomentosa</i>	Evil eye	<i>Dumoga birbira</i>	Bark Root	Dermal
<i>Myrsine africana</i>	Tape worm To relieve menstrual	Injera Milk	Seed Seed	Oral Oral
<i>Linum usitatissimum</i>	Dandruff	Water	Seed	Oral
<i>Englerina woodfordioides</i>	Syphilis	Butteg	Seed	Oral
<i>Plantago lanceolata</i>	Open wound Wart	Water Food	Leaf Leaf	Dermal Dermal
<i>Schefflera abyssinica</i>	Itching Teeth ache	Butter Milk	Leaf Shoot tip	Dermal Dermal
<i>Solanum indicum</i>	Ear pain Gonorrhea	None None	Fruit Flower	Dermal Oral
<i>Trigonella abyssinia</i>	Skin disease	<i>Vicia faba</i> <i>Brucea antidysenterica</i>	Fruit	Dermal
<i>Apodytes dimidiata</i>	Anthrax	<i>Phytolacca dodecandra</i>	Root	Oral
<i>Amaranthus cruentus</i>	Jaundice	Bread	Fruit	Oral