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Full Length Research Paper

Survey of medicinal plants used to treat human ailments in Hawzen district, Northern Ethiopia

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Traditional medicine is an integral part of the culture of the Ethiopian people due to its long period of practice and existence. The present study was conducted to identify the medicinal plants used to treat human ailments in Hawzen district, Northern Ethiopia. Twenty informants including six females were selected purposefully for semi-structured interview with the help of local elderly people. Ethnobotanical data was collected between January and February 2011 on seven field trips made to the site. Thirty-three species of medicinal plants were collected and identified for treating 25 human ailments. Most (17, 51.5%) of the traditional medicinal plants were collected from the wild stands and leaves (65%) and roots (17%) were the most commonly used plant parts for herbal preparations. Most (85.7%) of the traditional medicinal plant preparations were used in fresh form. Oral, dermal and nasal were the routes of application of remedies. Squeezing, grinding, boiling, chewing, crushing and tying were the methods of remedy preparation. Leaves were mainly harvested part for traditional medicine preparation in the area; the practice does not affect the sustainable utilization of the medicinal plants.

Key words: Ethnobotany, Ethiopia, Hawzen, medicinal plants, ailments.

INTRODUCTION

The plant kingdom is the most essential to human well being in providing basic human needs. Human beings used plants for the purpose of disease control and prevention since time immemorial. Early humans acquired the knowledge on the utilization of plants for disease prevention and curative purposes through many years experience, careful observations and trial and error experiments (Sofowora, 1982; Martin, 1995). Such ethnomedicinal knowledge involves traditional diagnosis, collection of raw materials, preparation of remedies and prescription to the patients.

More than 35,000 plant species are reported as being used across the globe for medicinal purposes (Lewington, 1993) and in Ethiopia more than 800 plant species have been employed as medicinal plants (Tesema et al., 2002). There is a considerable global interest in tapping the accumulated knowledge of traditional medicine; 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 (Demissew and Dagne, 2001). The documentation of traditional knowledge of medicinal uses of plants has provided many important drugs of modern day (Balick and Cox, 1996) as a source of direct therapeutic agents, as raw materials for the manufacture of complex semi-synthetic compounds and as taxonomic markers in the search for new compounds (WHO, 1998).

It is estimated that about 75 to 90% of the rural population in the world excluding Western countries depend on traditional medicines as their only healthcare system (Fassil, 2001). About 80% of the population in Africa primarily depends on traditional medicinal plants for their healthcare (WHO, 2002). Similarly, plants have been used as a source of traditional medicine since ancient times in Ethiopia to combat different ailments and human sufferings (Asfaw et al., 1999). Traditional medicine was the only option available for healthcare prior to the introduction of modern medicine for prevention, diagnosis and treatment of social, mental and physical illness (Dawit, 1986). Traditional medicine is an integral part of the culture of the Ethiopian people due to its long history of practice and existence (Mirgissa, 1998).

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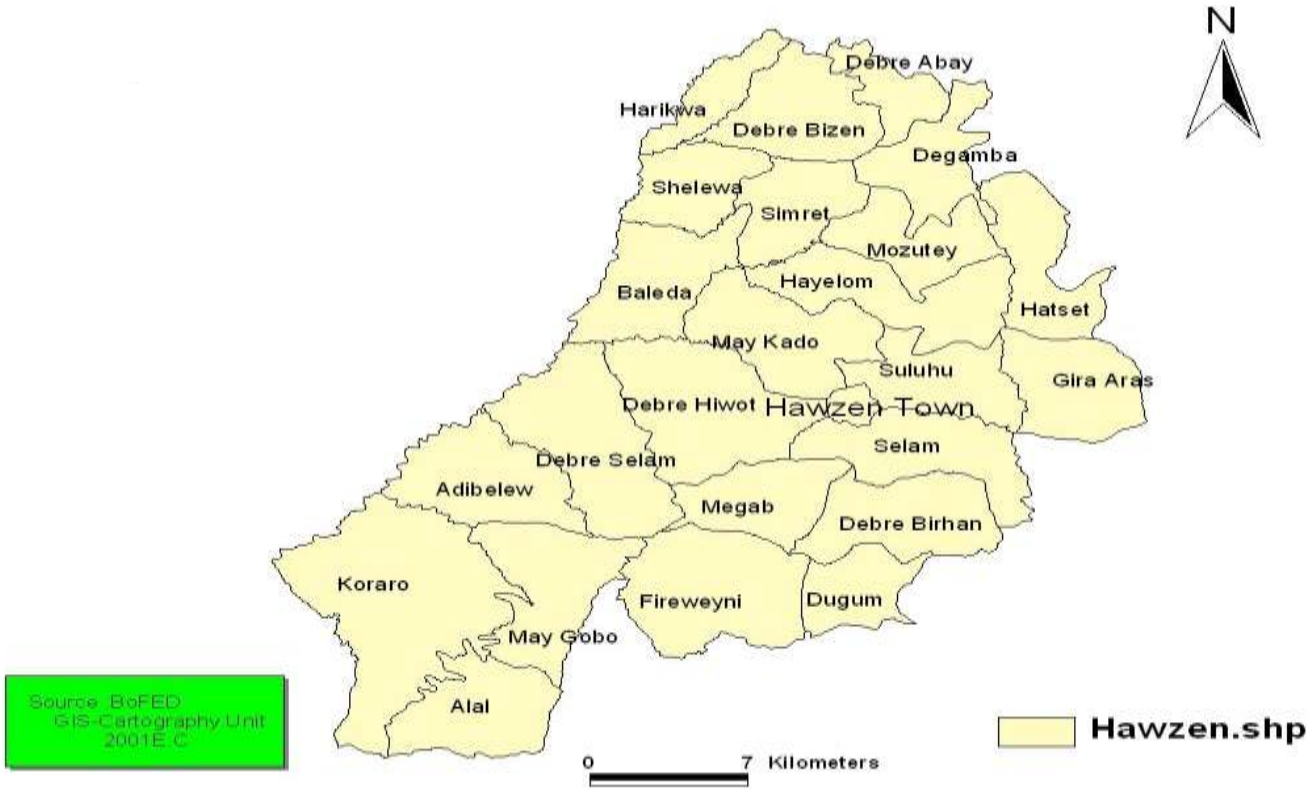

Figure 1. Map of Hawzen district showing the study site, Hayolom (Source: BoFED GIS-category unit, 2009.

There is a large magnitude of use and interest of medicinal plants in the country mainly due to acceptability, accessibility and biomedical benefits (Dawit, 2001). The majority of Ethiopians still depend on traditional medicine mainly due to shortage of pharmaceuticals, inadequate coverage of modern medical system and unaffordable prices of modern drugs (Zerabruk and Yirga, 2011).

The present study was conducted to identify the medicinal plants used to treat human ailments in Hawzen district, northern Ethiopia.

Study area

The study was conducted in Hayolom sub-district, in the Northern Ethiopian highlands (Figure 1), in Hawzen district located at about 75km from Mekelle, capital city of Tigray regional state of Ethiopia. The mean, minimum and maximum annual rain fall of the district is 580 and 750 mm respectively and the temperature ranges between 14 and 27°C. The total human population is 117,338 (56,616 males and 60722 females). Agriculture is the main economic source of the community. About 95% of the population of the district depends on agriculture practicing mixed farming, livestock husbandry and crop production simultaneously.

MATERIALS AND METHODS

A total of 20 informants (14 males and 6 females) were selected purposefully with the help of local area administrator and elderly people from Hayolom sub-district. Recommended traditional medicine practitioners were identified as potential informants and participated in personal interviews which were based on a checklist of questions prepared before hand in English and translated to the local language (Tigrigna). The majority (12, 60%) of the respondents were illiterate, with age range between 28 to 65 years. Ethnobotanical data was collected using semi-structured interviews between January and February 2011 on seven field trips made to the site. Information regarding local names of medicinal plants, methods of preparation, part(s) used, diseases treated, route of application, uses other than medicinal uses was recorded. Identification of the medicinal plants was done in Mekelle University using Flora of Ethiopia and Eritrea, by comparison with authentic specimens, illustrations and taxonomic keys.

RESULTS

Thirty-three plant species were collected and identified for treating 25 human ailments (Table 1). Most (17, 51.5%) of the traditional medicinal plants were wild, five species (12.1%) were cultivated and the remaining 12 species (36.4%) were obtained both from cultivation and the wild. Most of the traditional medicinal plant preparations were used in fresh form (85.7%). It was found that 57.1% of medicinal plants have values other

Table 1. List of medicinal plants, disease treated, ingredients added, and condition of plant used in the study area.

Vernacular name	Scientific name	Family name	Disease treated	Ingredients added	Condition of the plant used
Seraw	*Acacia etbaica* Schweinf.	Fabaceae	Wart	None	Dry
Muchelo	*Achyranthes aspera L.*	Amaranthaceae	Foot strain	None	Fresh
Tsaeda shgurti	*Allium sativum L.*	Alliaceae	Gland TB	None	Fresh
Ere	*Aloe barbadensis* Miller.	Aloeaceae	Foot strain	None	Fresh
Endirur	*Balanites aegyptiaca L.*	Zygophyllaceae	Snake bite	None	Fresh
Hemligbo	*Chenopodium oplifolium* Auct.	Chenopodiaceae	Wound	None	Fresh
Lemon	*Citrus aurantifolia L.*	Rutaceae	Mouth smelling	None	Fresh
Awuhi	*Cordia Africana Lam.*	Boraginaceae	Abdominal pain	Coffee	Fresh
Shinfa	*Coronopus didymus L.*	Brassicaceae	Common Cold	None	Dry
Tanbuk	*Croton macrostachyus* Hochst.	Euphorbiaceae	Abdominal pain	Chili	Fresh
Tanbuk	*Croton macrostachyus* Hochst.	Euphorbiaceae	Hepatitis	None	Fresh
Haffaflo	*Cucumis pustulatus* Hook.	Cucurbitaceae	Eye infection	None	Fresh
Duba	*Cucurbita pepo L.*	Cucurbitaceae	Tapeworm	None	Dry
Tenege	*Cynoglossum coeruleum* Hochst.	Boraginaceae	Skin cramp	None	Fresh
Acerkuka	*Cyphostemma adenocaule* Baker.	Vitaceae	Anthrax	Honey	Fresh
Acerkuka	*Cyphostemma adenocaule* Baker.	Vitaceae	Snake Bite	None	Fresh
Mestenagir	*Datura innoxia Mill.*	Solanaceae	Leishmaniasis	None	Fresh
Mezerbai	*Datura stramonium L.*	Solanaceae	Hair fungal infection	None	Fresh
Tsaida Baharzaf	*Eucalyptus globulus* Labill.	Myrtaceae	Common cold	None	Fresh
Kuliaw	*Euclea natalensis L.*	Ebenaceae	Rabies	Cheese	Fresh
Shlanata	*Foeniculum vulgare L.*	Apiaceae	*Entamoeba histolytica*	None	Fresh
Metere	*Glinus lotoides L.*	Molluginaceae	Oestrus ovis	None	Fresh
Entati	*Linum usitatissimum L.*	Linaceae	Sewage around neck	None	Fresh
Andel	*Maytenus senegalensis Lam.*	Celastraceae	Evil eye	None	Fresh
Awli	*Olea europaea L.*	Oleaceae	*Entamoeba histolytica*	None	Fresh
Shibti	*Phytolacca dodecandra L.*	Fabaceae	Abortion	Holy water	Fresh
Tetaelo	*Rhus natalensis* Bernh.	Anacardiaceae	Depression	None	Fresh
Hahot	*Rumex nervosus Vahl.*	Polygonaceae	Vomiting	Honey	Fresh
Chena-Adam	*Ruta chalepensis L.*	Rutaceae	Cholera	None	Fresh
Tickure berebere	*Schinus molle L.*	Anacardiaceae	Abdominal pain	Garlic	Fresh
Tfreria	*Sida schimperiana* Hochst	Malvaceae	Foot strain	None	Dry
Engule	*Solanum incanum L.*	Solanaceae	Lumbar strain	None	Fresh
Abaeke	*Trigonella foenum-graecum L.*	Fabaceae	Abdominal pain	None	Fresh
Sebere	*Vicia sativa L.*	Fabaceae	Scabies	Cheese	Dry
Agol	*Withania somnifera L.*	Solanaceae	Common cold	None	Fresh

Table 2. Methods of Preparation of remedies and other uses of the traditional medicinal plants in the study area.

Methods of preparation	Frequency	Percentage
Squeezing	12	34.3
Grinding	8	22.9
Chewing	4	11.4
Boiling	5	14.2
Crushing	3	8.6
Tying	3	8.6
Total	**35**	**100**

Other uses of the medicinal plants	Frequency	Percentage
Fire wood	10	28.6
Food	5	14.2
None	15	42.9
Washing	2	5.7
Splice	3	8.6
Total	**35**	**100**

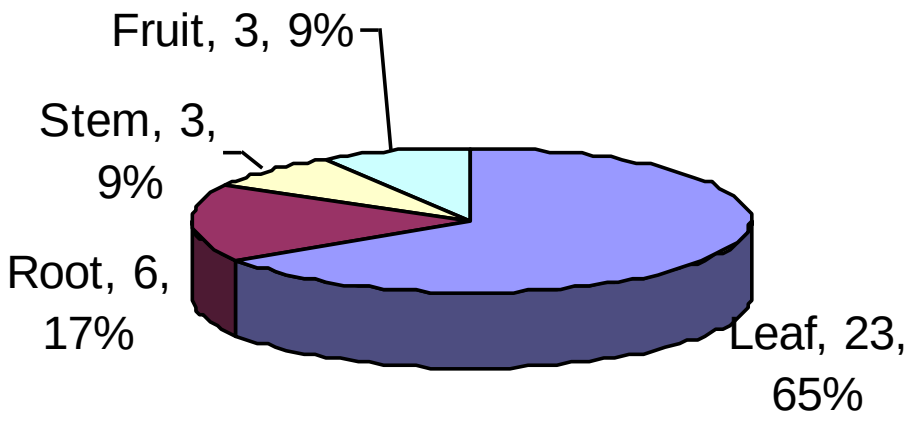

Figure 2. Parts of the medicinal plants used in the preparation of remedies.

than their medicinal role (Table 2). The most commonly used plant parts for herbal preparations were leaves (65%) and roots (17%) (Figure 2). Oral, dermal, nasal, oral or dermal were the routes of application of remedies in decreasing order (Figure 3). Squeezing, grinding, boiling, chewing, crushing and tying were methods of preparation/application used in the study area (Table 2).

DISCUSSION

In Ethiopia, more than 800 plant species have been used as medicinal plants (Tesema et al., 2002). However, only 33 species of medicinal plants were recorded and identified for treating 25 human ailments in Hayolom sub-district. Large magnitude of use and interest in medicinal plants in Ethiopia is due to acceptability, accessibility and biomedical benefits (Dawit, 2001). The long history of use of medicinal plants in the country is believed to have originated several centuries ago (Kibebew, 2001).

In various parts of the world, medicinal plants are mostly harvested from the wild sources (Lange, 1998). Various researchers in Ethiopia have also reported that most of the medicinal plants are obtained from the wild vegetation (Awas and Asfaw, 1999; Mesfin, 2007; Yirga, 2010b). Similarly, in the study area, most of the medicinal plants were collected from the wild stands. It is therefore important that the healers in consultation with government officials should take care not to deplete medicinal plant species altogether. Moreover, awareness

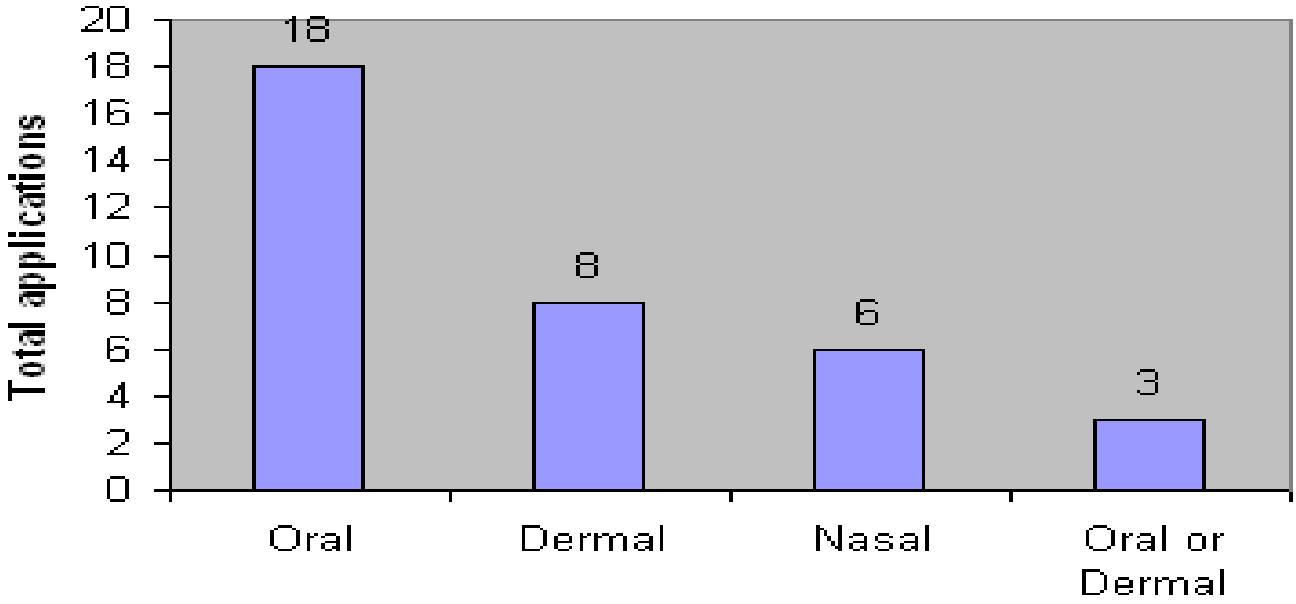

Figure 3. Route of application of traditional medicinal plants.

creation among the traditional healers and community at large is important in order to preserve the indigenous medicinal plant species (Yirga, 2010a).

Leaves were the most harvested plant part of remedy preparation in the area which does not affect the sustainable utilization of the medicinal plants. Collecting leaves does not cause great danger to the continuity of an individual plant compared to the collection of roots, bark, stem or whole plant. However, the dependence on roots of plants results in consequences from both ecological point of view and from the survival of the medicinal species (Abebe and Ayehu, 1993). Further research in the use, management and conservation of medicinal plants should target conservation in the area.

Oral application was the leading route of application of traditional medicine in northern Ethiopia followed by dermal. Various ethnobotanical researchers elsewhere in Ethiopia have also indicated oral as the predominant route of application (Abebe and Ayehu, 1993; Gidey, 1999; Hunde, 2001; Addis et al., 2001; Balemie et al., 2004; Lulekal, 2005; Mesfin, 2007; Yirga, 2010a).

Squeezing, grinding, boiling, chewing, crushing and tying were also other methods of preparation used. Grinding or crushing and soaking or boiling different parts of plants are common methods for drug extraction (Deeba, 2009). Application routes and the medical preparation methods differ depending on the active ingredient to be extracted (McCorkle and Mathias-Mundy, 1992).

Traditional medicine plays a central role in health care needs of the people of developing countries. This condition would remain for long, because modern medicine continues to be unable to meet the health care of the people effectively (Jansen, 1981). The dependence of traditional medicinal plants and their role in health care system will increase in the future as they are culturally viable and expected to remain affordable (WHO, 1998) and the modern health care service is limited and expensive compared to the traditional medicine.

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