



Medico ethno botany; a study on the Amhara ethnic group of Gondar district of North Gondar Zone Ethiopia

Muthuswamy Ragunathan^{1*}, Berhanemeskel Weldegerima²

1. Medicinal Plant Documentation Unit, Department of Pharmacognosy, School of Pharmacy, Post Box 196, University of Gondar, North Gondar, Ethiopia.

2. Department of Pharmaceutics, School of Pharmacy, University of Gondar, Post Box 196, North Gondar, Ethiopia.

Abstract

Objective: The objective of this study was to document Medico ethno botanical information of medicinal plants in Amhara ethnic group of Gondar district in North Gondar zone of Ethiopia. Based on the local utilization and indigenous knowledge provided by the ethnic group, the therapeutic uses of important medicinal plants was documented for future biological screening. **Materials and methods:** Field survey and personal discussion methods have been used in collection of data and the medico ethno botanical information was collected by under going field trips to different villages of the district. **Results and discussion:** A list of 24 flowering plants belonging to 22 genera and 18 families which are applied for therapeutic usage by the Amhara ethnic group of Gondar. Vernacular names, ethno medicinal use, mode of preparation, and application to treat diseases are focused here.

Key words: Ethno Medicine, Amhara ethnic group, Gondar, Ethiopia.

1. Introduction

The Ethiopian flora is estimated to contain between 6500 to 7000 species [1] of higher plants in which about 10% to 12% are estimated to be endemic. Among the higher plant species that are known to exist in the country 800 to 1000 of them are employed in traditional health care delivery system to prevent and treat nearly 300 physical and mental disorders. Researchers

have shown keen interest in the floral richness of Ethiopia to document and classify it as world center of diversity and the country is often quoted as one of the six countries in the world where about 60% of plants said to be indigenous with their healing potential [2, 3, 4]. In Ethiopia loss of indigenous knowledge is not too far from developing countries the vast knowledge on

* Corresponding author

Email: ragunathanilmonica@yahoo.com

traditional uses of plants is not fully documented and most of the knowledge is conveyed from generation to generation by word of mouth [2] and the rapid loss of natural habitat of these plant forces should be documented. With this background a study of medico ethno botanical survey on Amhara ethnic group was performed to document the indigenous knowledge of plant, which is used by Amhara ethnic group of Gondar district.

2. Ethnography

Gondar district is one of the 18 districts of north Gondar zone of Amhara national regional government of the Federal Democratic Republic of Ethiopia. Gondar itself is administrative capital of north Gondar zone. The Gondar is approximately 748 km northwest to Addis Ababa, which is capital city of Ethiopia. Gondar city lies between 12° 40 "n and 37° 45 "e latitude. The district composed of highlands at an altitude of 2100 to 2870 meters it covers the area of 4,027 sq. km. With in the Gondar number of urban, rural areas each made of number of villages. The Gondar has an estimated population of about 186,077 among these 93,265 are males and 92,812 are females and the population density is 46.20 peoples per square km. This is based on the population census 2004 [5]. The Gondar district is bordered with in the Gondar Zuria district.

The annual rainfall is from 711.8 to 1822 mm, the mean annual rainfall is 1159.22 mm, and the mean monthly temperature range from 18°C to 22°C. The topography of the district constitutes rounded hills, gentle slope and partially rocked by higher elevation. Geographically, the extensive area of volcanic rock consists of basaltic flows deeply eroded water moves through fractures and the type of soil is silt clay loam, brown in color and the soil depths between 20 and 70 cm.

There are five ethnic groups in this district. They are Amhara 88.9%, Tigray 6.7%, Kimant 2.4%, Oromo 0.6% and Eriterians 0.5%. Among these Amhara ethnic group is the most predominant 88.9%. Concerning religion 83.3 % of the population are orthodox Christian, 15.8% Muslims and protestant 0.4% catholic 0.1%. The working language of the district is Amharic based on statistical abstract, July 2005, Central Statistical Authority of Ethiopia [5, 6].

3. Methodology

The ethno medicinal information was collected by field trips to different villages in Gondar. We met the different ethnic groups along with local traditional healers to collect which plants and what parts the local population uses and for which purpose subsequently plants of importances to the local people were documented. Some of plants used in traditional medicine were collected for further pharmacological screening. The type of information gathered from the ethnic group includes plant habitat, part used, therapeutic uses, disease treated and the vernacular names are given in Amharic language and denoted as 'A'. Those names are used by Amhara ethnic group of Gondar district, the voucher specimen of all the plants were stored in the Herbarium at the Survey of Medicinal Plant Collection Unit, School of Pharmacy, Gondar University, Gondar, Ethiopia.

4. List of plants used as a medicine

4.1 *Zehneria scabra* [L.f.] Sond. Family Cucurbitaceae A: *Areg resa*

Handfull of fresh leaves are crushed with water into juice, with the help of stone mortar and pestle. After the filtration, half-cup (75 ml) of leaf juice is given orally in the morning and evening for a period of ten days to overcome abdominal pain, chronic diarrhea and jaundice.

Half cup of fresh flowers, fruits and leaves are placed in a pot full of boiling water. The steam vapors from the pot are inhaled for about five minutes. Another mode involves, drinking a cupfull of filtrate of the boil daily in morning for a week to cure jaundice, fever, asthma and running nose, cold and headache.

A cup of flower decoction is given orally in the morning and evening for a week, to treat eye diseases like cataract and redness of the eye.

Handfull of leaves are grounded to make a paste and mixed with equal quantity of butter and applied over the skin for the treatment of skin rashes, alopecia and as a protective for sun radiation.

Fist of leaves and a piece of root are grounded and immersed in warm water and the same is used for bathing daily for a week time to cure rabies.

4.2 *Combretum collinum*, Fresen. Family Combretaceae A: weyiba

A piece of fresh bark is soaked in 150 ml of water for overnight and filtered in the following morning and a cupfull of filtrate is given orally for a fortnight to treat jaundice. A piece of bark is tied around the neck as a talisman for the cure of jaundice.

4.3 *Anogeissus leiocarpa* [A. DC.] Guil, Perr. Family Combretaceae A: Kirkra

One teaspoon of stem bark powder is boiled with water filtered and cup of this filtrate is administered orally for thirty days in the morning and evening to cure jaundice.

A teaspoon of leaf and root powder is boiled in water to make decoction. A cup of this is given orally three times a day for forty days in the morning and evening to treat bone fracture. The leaf paste is applied externally for bone setting. Both leaf and root paste is applied externally for wound healing.

4.4 *Cucumis ficifolius*, A. Rich. Family Cucurbitaceae A: Yemidir embuay

Decoction is prepared by mixing one teaspoon of root powder in 150 ml of boiling water. This decoction is given orally twice a day in the morning and evening for seven days to treat abdominal pain, snakebite, scorpion sting, rabies, arthritis, ascariasis, syphilis and toothache.

Large pieces of fresh root are grounded into paste with the help of stone mortar and pestle. It is applied over arthritis-affected area to reduce pain.

Root part is used for making local honey wine.

4.5 *Cucumis prophetarum*, L. Family Cucurbitaceae A: Yeemechat Kura.

A tablespoon of root powder is boiled in 150 ml of water to obtain a decoction. The obtained decoction is given orally at bedtime every day for one month to cure panic attack, nightmare and anxiety.

4.6 *Cucurbita pepo*, L. Family Cucurbitaceae A: Duba

A teaspoon of seed powder is boiled in 150 ml of water to make decoction. A cup of this decoction is given orally in the morning for five days in empty stomach to kill and expel out the tapeworm.

4.7 *Myrtus communis*, L. Family Myrtaceae A: Ades

A paste obtained from grounded leaves with butter is applied on the hairs to get rid of dandruff. Leaf juice is used to treat alopecia.

4.8 *Malva parviflora*, L. Family Malvaceae A: Lut

A decoction is made from a teaspoon of root powder and a cup of this is given orally three times a day for seven days to treat arthritis and

muscle cramps. A piece of fresh root is grounded to make a paste and applied over the arthritis-affected area to reduce inflammation.

4.9 Phyllanthus ovalifolius, Forssk. Family Euphorbiaceae A: Kentafa

Pieces of root and stem are boiled in water and filtered. A cup of this filtrate is given orally for fifteen days in the morning and evening, for the treatment of arthritis.

4.10 Euphorbia ampliphylla, Pax. Family Euphorbiaceae A: Qulqwal

A cup of oozing milky latex from the severed leaf stalk nodes is collected and applied over the skin to treat skin leishmaniasis, eczema and pain in scorpion sting. Root paste is tied with support of wooden material for bone setting.

4.11 Euphorbia abyssinica, Gmel. Family Euphorbiaceae A: Kaka

A teaspoon of root powder is boiled in 150 ml of water, filtered and the cup of filtrate is given orally in empty stomach for a period of 15 days to cure gonorrhea.

4.12 Capparis tomentosa, Lam. Family Capparidaceae A: Gmero, Andel

A tablespoon of root powder is boiled in 150 ml of water to make decoction. A cupful of this decoction is given orally twice a day to reduce the inflammation. A piece of root is grounded with water and the resultant paste is applied over inflamed area to reduce inflammation.

Root powder is sprinkled on burning charcoal and the smoke is inhaled to cure common cold.

4.13 Phytolacca dodecandra, L'H'érit. Family Phytolaccaceae A: Endod

The saponins, which are found in the plant berries, have molluscidal activity. Berries have control of the schistosomiasis (bilharzias) by destroying snail [7].

Taking a teaspoon of root powder and boiling in two cups of water prepare a decoction. A cup of this decoction is given orally in the morning and evening for 15 days to cure gonorrhea.

A fist of leaves is grounded to get half a cup of juice and is given orally as an oxytocic. It terminates the pregnancy even in a second trimester. Severe vaginal bleeding is the side effect.

4.14 Alternanthera pungens, Kunth. Family Amaranthaceae A: Bulakitel

A teaspoon of root powder is boiled in 150 ml of water and filtered. A cupful of this filtrate is given orally three times a day, for twenty days to cure jaundice and liver cirrhosis. A fist of fresh leaves is grounded and the resulting paste is applied externally for wound healing.

4.15 Rumex abyssinicus, Jacq. Family Polygonaceae A: Meqmoqo

One teaspoon of root and rhizome powder are placed in boiling water and filtered. A cup of this decoction is given orally in the early morning, in empty stomach to control diabetes mellitus.

4.16 Acokanthera schimperi, [A.DC.] Schweinf. Family Apocyanaceae A: Mrenz

A cup of decoction is prepared by boiling teaspoon of root powder in 200 ml of water. It is given orally in the early morning and evening for forty days to cure cataract. Five to six drops of fresh root juice are poured into the eye daily for fifteen days, for the same complaint.

4.17 Buddleja polystachya, Fresen. Family Loganiaceae A: Amfar

A handfull of leaves are crushed with water into juice. A cup of this juice is given orally for ten days in the morning and evening to cure Malaria.

**4.18 *Euclea racemosa*, Murr. Family Ebenaceae
A: Dedho**

For eye diseases five to six drops of fresh root juice is poured into eye for a week. For pain due to scorpion sting and scabies, paste obtained by grinding a piece of fresh root with water is applied directly over the affected area.

The smoke of the burnt dried leaves acts as an insecticide

4.19 *Embelia schimperi*, Vatke. Family Myrsinaceae A: Enqogo, Enkiko

Fist of fruits are made into a cup of juice and is given orally in empty stomach in the morning for seven days to treat taeniasis.

A teaspoon of seed powder boiled in 150 ml of water filtered and a cup of this filtrate is given orally in empty stomach in morning for three days as an anthelminthic.

4.20 *Hagenia abyssinica*, [Bruce] J, F, Gmel. Family Rosaceae A: Kosso

The grounded fruits are soaked in water, filtered and a cup of this filtrate is given orally in empty stomach in morning for five days to push out tapeworms.

Handfull of crushed flower soaked in 200ml of local beer (Tela) or water overnight, filtered and a cup of this filtrate is given orally in the following morning as an anthelminthic.

Handfull of leaves crushed with water and made into juice and a cup of the same is given orally in empty stomach to terminate pregnancy. Severe vomiting is a side effect.

4.21. *Calpurnia aurea*, [Ait,] Benth. Family Fabaceae A: Zgta

A teaspoon of seed powder boiled in 250 ml of water, filtered and a cup of this filtrate is given orally to cure dysentery.

4.22 *Clausena anisata*, [Willd,] Benth. Family Rutaceae A: Immacc

Handfull of leaves are grounded with water into juice and a cup of this is given orally in the morning and in the evening to cure fever (Anti pyretic).

4.23 *Bersama abyssinica*, Fresen. Family Melianthaceae A: Azamir

Handfull of leaf are crushed with water and made into juice and a cup of this is given orally three times a day for a week to cure ascariasis.

4.24 *Aframomum corrorima*, [Braun,] Jansen. Family Zingiberaceae A: Kororima

A teaspoon of seed powder mixed with a cup of boiling water is given orally to treat indigestion. It is also used as a food additive and Stomachic.

5. Results and Discussion

The study demonstrated that about 24 plant species of 22 genera were found to have application in the traditional health care delivery system of the people in Gondar region. Its morphological characters got identified in all the plant species. And the plant species are distributed in 18 plant families, among the plant families the plants were recorded in Cucurbitaceae 4 species, Combretaceae 2 species, and 3 species in Euphorbiaceae. Each one species in Rosaceae, Myrtaceae, Malvaceae, Amaranthaceae, Capparidaceae, Apocynaceae, Phytolaccaceae, Polygonaceae, Loganiaceae, Ebenaceae, Myrsinaceae, Fabaceae, Melianthaceae, Rutaceae and Zingiberaceae.

The most of the plant preparations were from single plant and also combination of plant species were also used according to the study done in Gondar district Ethiopia. The potential effect [synergistic interaction] of combination of plants

play important role on the desired therapeutic effect. In combination therapy the fresh leaves juice of *Phytolacca dodecandra* and *Euphorbia amplophylla* given for the treatment of starvation caused diseases and the fresh latex of later plant and fresh leaf paste of former plants are pounded and applied on the affected area for the treatment of eczema.

The root parts of *Gomphocarpus stenophyllus* and *Phytolacca dodecandra* are grounded and soaked in water and the filtrate was drunk on an empty stomach for rabies. The plant products were consumed orally in the form of raw juice, decoction, and macerated material or as infusion where as raw paste, leaf juice applied externally, for skin wound and other skin diseases. The major illness treated by the community includes bone fracture, skin wounds, syphilis, fever, abdominal colic, jaundice, rabies, ascariasis, malaria, gonorrhea and scabies. The roots are the mainly used plant parts, according to the plant part usage 27 remedies from root accounting (36%), 23 from leaf (31%), 9 from fruit (12%) and 9 from flower (12%), 3 from latex (4%) 2 from stem (2.5%) and 2 from bark (2.5%). A maximum remedies are prepared in the form of a juice from freshly collected plant parts. The juice usually prepared by pounding or crushing the plant part in a wooden or stone mortar and pestle, water and local beer called *tela* used to dilute the juice. Most of the remedies reported were prepared from single species. Most of the remedies are taken orally (29) accounting for 63.04% of medicinal plant use, Followed by external application (applied topically on skin) (14) 30.43% and for eye instillation (2) accounting 4.34%. Inhalation (1) accounting 2.17% and the dried leaves of *Euclea racemosa* are fumigated in the home as

insecticide. The most of the remedies, a full dose is taken at once. The dose given to the patient depends on age, physical and health condition.

6. Conclusion

The present study has documented medico ethno botanical information of plants that are used by the community for various illnesses. The medicinal plants that have higher informant consensus are claimed to treat the most of the prevalent diseases of the district such as abdominal problem and skin diseases. This shows that herbal medicine might have greater role in the primary health care in the community of Gondar district. Most of the medicinal plants are collected from wild and root part is commonly used plant part, this might aggravate loss of biodiversity thus promoting cultivation of medicinal plants by the community may reduce destruction of wild plants. The identity and study of endangered species of medicinal plants will pave the way for conservation measures to be taken by the responsible authorities.

The present study could contribute partial remedies in the preservation of cultural heritage and a base to researchers for further pharmacological toxicological and phytochemical studies.

7. Acknowledgements

The author is thankful to head, planning and research, Gondar city service office, Mr. Fentahun Chame Public relation expert, information culture social affairs office Gondar, and Mr. Chandrashekhhar Jaiswal freelance botanist, Tourism Department Gondar University for his valuable support in plant identification.

References

1. Tewolde B.G Egziabher [1991] Diversity of the Ethiopian flora .In plant genetic resources of Ethiopia, Ed JMM Engles, J.G. Hawkes and Melaku Worede. pp 75-81 Cambridge University Press, Cambridge.
2. Addis G, Abebe D, and Urga K, [2001] Ethiopia, *Ethiopian pharmaceutical journal* 19: 30-47.
3. Giday M. [2001] an ethno botanical study of medicinal plants used by the zay people in *Ethiopia CBM'S skriftserie*, 3:18-99 Uppsala.
4. Kloos H, Tekle A, Yohannas L, Yosef A, Lemma A, [1978] *Ethiopian medical journal* 16: 33-43
5. Central statistical authority of Ethiopia (CSA) statistical abstract July 2005
6. The population and housing census of Ethiopia results for Amhara region volume 1 part 1 page no 110-182 CSA 1994.
7. Lemma, A and Yau, P. [1974] *Ethiopian medical journal*, 12:190