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Indigenous Knowledge and Traditional Use of Medicinal Plants by Four Major Tribes of Nagaland, North East India

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Abstract
Ethnobotany is an important branch of research that deals with medicines derived from plants and use of different plant parts in the treatment of various disease and ailments, based on indigenous pharmacopoeia, folklore, and herbal charms. An extensive study on Traditional practice of medicinal plants by 4 major tribes of Nagaland was conducted in different localities from districts of the state. The tribes undertaken for study were Ao, Angami, Lotha, Sema, residing in Nagaland. The survey was conducted by interviewing Local healers, village elders, and farmers. A total of 50 informants from 20 villages were interviewed which includes 9 local herbalists, 11 traditional healers, 8 mid-wives, 6 bonesetters, 10 village elders, and 6 farmers. The study comprises 257 species of ethnomedicinal plants belonging to 85 families. The conservation efforts are needed for plantation and protection of these plants with maximum participation of local people.
Keywords: *Ex situ conservation, Natural products, Traditional healing system.*

1. Introduction

Ethnobotany is an important branch of research that deals with medicines derived from plants and use of different plant parts in the treatment of various disease and ailments, based on indigenous pharmacopoeia, folklore, and herbal charms (Weiner, 1971). The knowledge of this traditional healing system is as old as humanity and dates back to the beginning of civilization. Ethno botanical studies have led to the documentation of conventional and nonconventional medicinal plants used by tribals for meeting their multifarious requirements. The tribal people and ethnic races throughout the world have developed their own cultures with the medicinal plants etc.

According to World Health Organisation (WHO), 80% of the world's people depend on medicinal plants for their primary health care needs. Anything that leads to the greater utilization of our natural products deserves encouragement. Today there is an increasing desire to unravel the centuries old secrets of traditional medicines which in turn deserves sustainable development of our environment. The wealth of medicinal plants is of vital importance to a vast country like India where qualified physicians and other medicinal staff have not reached in the tribal and remote rural areas.

Nagaland is one of the states of North Eastern part of India which is bordered by Myanmar in the East, Assam in the west, Manipur in the south, Arunachal and partly Assam in the north. It lies between 93.5 to 94.70□N longitude and 25.5 to 27.5 □E latitude. The state as a whole is a hilly tract and occupies an area of 16,527 sq. km. The state consists of 11 districts, 17 aboriginal tribes and sub-tribes. The state shows great diversity of altitude and physical features. Climate varies from hot and dry, to moderate and cold to very cold at higher elevation. The highest peak in the state is Mt. Saramati located at an altitude of 3877 MASL. Average rainfall in the state is 250 cm. The major tribes under the study are Angami, Ao, Lotha and Sema, belonging to 4 different districts. The Angamis are the inhabitants of Kohima district, Ao belongs to Mokochung district, Lothas from Wokha District and Semas from Zunheboto District.

2. Materials and methods

The state of Nagaland is situated in the North Eastern region of India, and covers an area of 16,579 sq. Km. Nagaland is situated between 25º06' – 27º04' N latitude and 93º20'–95 º 15' E longitudes. An extensive study on Traditional practice of medicinal plants by 4 major tribes of Nagaland was conducted in different localities from districts of the state. The tribes undertaken for study were Ao, Angami, Lotha, Sema, residing in four different districts. 5 villages from each district were under taken for the field survey. A total of 50 informants from 20 villages were interviewed which includes 9 local herbalists, 11 traditional healers, 8 mid-wives, 6 bonesetters, 10 village elders, and 6 farmers. The age of the informants ranges from 25-85 with an average of 60 years. Most of the selected informants belong to those families who have a strong connection with traditional knowledge of medicinal plants. Routine methods of plant collection and herbarium technique have been followed in the study (Jain and Rao 1977)**.** Information about the plants were recorded with regards to their vernacular names, plant parts used, process of preparation of medicine, either individually or in combination with other plant parts, and mode of application. The preserved plant specimens were brought and submitted in the herbarium shelf of Botany Department, USTM for further identification. The collected plants were identified and confirmed by consulting the FFM vol. 1-2: (1985 & 1987); FM vol. 1: (2000); already identified herbarium specimens from BSI herbarium, Eastern Circle, Shillong and Department of Botany , USTM.

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3. Results and discussions

An ethnobotanical survey on traditional of traditional practice of medicinal plants of 4 major tribes (Ao, Angami, Lotha, Sema) of Nagaland was carried out in 4 different districts namely Mokokchung, Kohima, Wokha, Zunheboto. The survey was conducted by interviewing Local healers, village elders, and farmers. Different tribes have provided vast information regarding medicines and traditional health care practiced by them. The study comprises 257 species of ethnomedicinal plants belonging to 85 families, of which 112 species of medicinal plants were recorded from Ao tribe, 54 species from Lotha tribe, 37 species from Angami tribe and 54 species from Sema tribe.

The most dominant family recorded as a whole is Asteraceae (13 species); followed by Ruta ceae and Lamiaceae (12 species); Solanaceae (11 species); Fabaceae, Malvaceae, and Mimosaceae (10 species); Euphorbiaceae (9 species); Moraceae and Zingiberaceae (8 species); Caesalpinaceae (7 species); Anacardiaceae, Acanthaceae, and Poaceae (6 species); Apocynaceae, Verbenaceae, and Urticaceae (5 species); Betulaceae, Phyllanthaceae, Brassicaceae. and Lauraceae (4 species); Amaranthaceae, Caricaceae, Rubiaceae, Papaveraceae, Passifloraceae, Rosaceae, Bigoniaceae, Combretaceae, Polygonaceae, and Meliaceae (3 species); Amaryllidaceae, Araliaceae, Begoniaceae, Nyctaginaceae, Cannabaceae, Cucurbitaceae, Araceae, Costaceae, Musaceae, Plantaginaceae, Myrtaceae, Melastomataceae, Magnoliaceae, Thymelaceae, Papilionaceae (2 species); other families with single number of species are Aspargaceae, Araliaceae, Apiaceae, Araceae, Altingiaceae, Burseraceae, Berberidaceae, Bombaceae, Colchicaceae etc. (fig. 3).

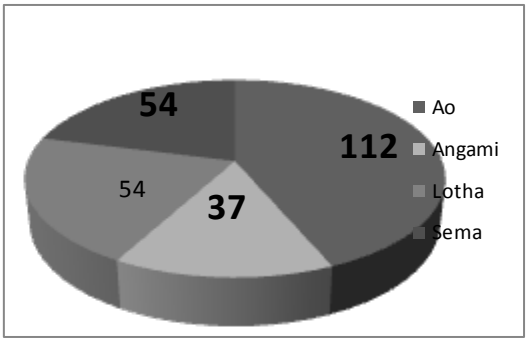

Figure.1: Total number of plant species per tribe

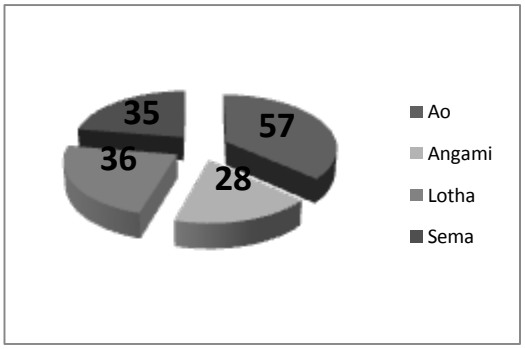

Figure 2: Total number of family per per tribe

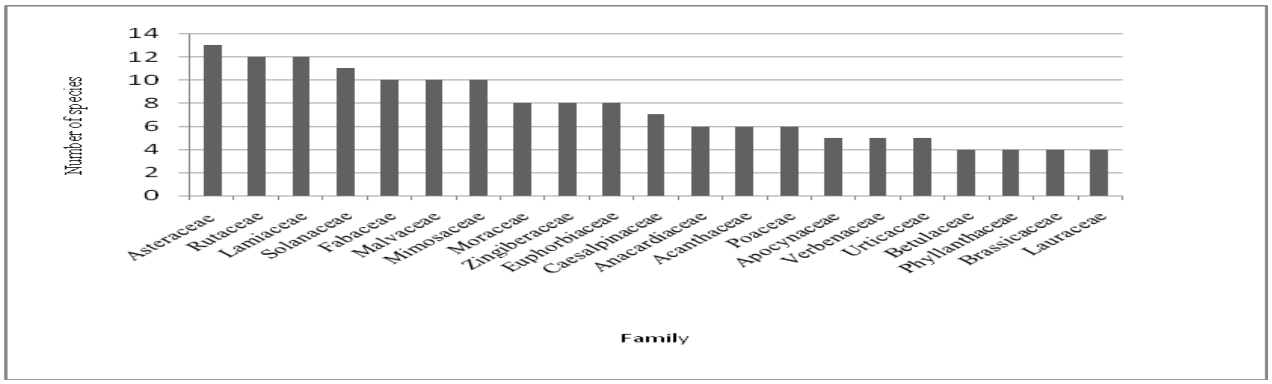

Figure 3: Dominant families of the plant species recorded from the 4 Tribes.

The most commonly occurred disease among the 4 tribes for which the medicinal plants are mostly use is the Skin disease, followed by Rheumatism, Dysentery, Diarrhoea, constipation, Digestive problem, Gastric and Blood related problems (fig. 4).

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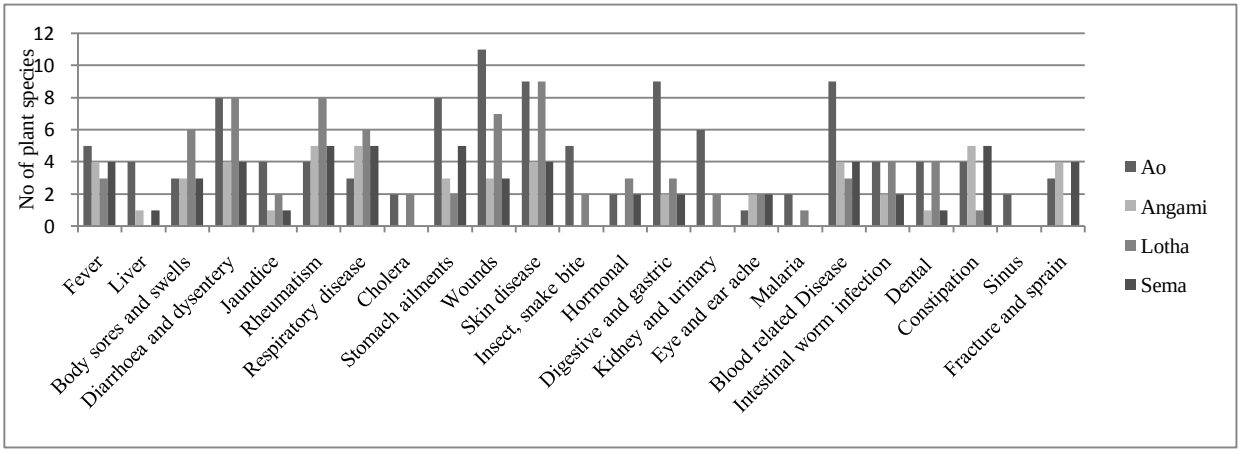

Figure 4: Number of plant species used for curing some major ailments.

Herbs were found to be the most used plants of which Ao tribe recorded the highest number of herbs in preparing traditional medicines i.e 46 plant species, followed by trees of which Lotha tribe has the highest number recorded i.e 30 plant species, Shrub, Climbers, and Creepers (fig. 5). Different parts of medicinal plants were used as medicine by the local traditional healers. Among the different plant parts, the leaves were most frequently used for the treatment of diseases followed by Root, Fruit, Flower, Tuber, Rhizome, Bark, Stem, Whole plant and Seed (fig. 6). The methods of preparation fall into four categories, viz.: plant parts applied as a paste (30.9%), decoction (30.9%), juice extracted from the fresh plant parts (29.09%) and powder made from fresh or dried plant parts (9.09%). The maximum number of prescriptions are orally administered which are followed by topical or local applications. External applications (mostly for skin diseases, snake bites and wounds) and internal consumption of the preparations were involved in the treatment of diseases. Smoking, taking bath, snuffs, tying to the body parts, etc. are also applied sometimes.

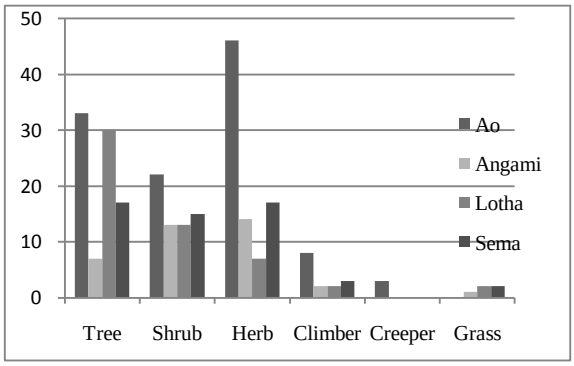

Figure 5: Frequency of plant habit of four tribes.

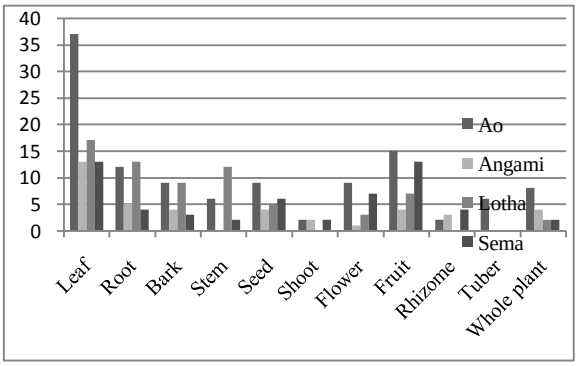

Figure 6: Frequency of plant part used of the four tribes

The local medicine men are generally found in each of the villages in this region. They generally collect plants from their surrounding plant communities and process the drug and preserve the drug plants in their homestead gardens. About 40% of the plants species are conserve in their home gardens and paddy fields for their use without visit to forest and 30% species found in wild conditions because of their abundant distribution.

Local healers of the four tribes use some plants to treat not only one but number of diseases which are plants like Erythrina stricta R., Emblica officinalis G, Litsea citrate BI, Bauhinia variegate L., Acacia pinnata L. Willd, Alstonia scholaris L. Br., Carica papaya L. etc. are found to be used by all the 4 tribes, treating the same diseases and some treating different type of diseases. Alnus nepalensis are used by the local healers of Ao and Angami Tribe for treating Diarrhoea and dysentery, the local healers of the Sema Tribe used these plant for treating cuts and wounds, and the Herbalist of the Lotha Tribe used it for the treatment of both Dysentry and wounds. Mimosa pudica is used to treat cuts and wounds by the Healers of the Ao Tribe, to treat Skin diseases by the Traditional healers of the Sema Tribe, in treating diseases like Diarrhoea and urinary infection by the Angami's, and the local healers of the Lotha Tribe use this plant as an antitode for

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snake and insects bite. It seems that different tribes have been testing and standardizing use of different plant species of their locality in treating a variety of disorders, and this is how the knowledge on ethnomedicine has congregate and built up over the ages. The result of the present studies provides evidence that Medicinal plants continue to play an important in the health care system of these tribal communities.

After studying the Traditional practices and indigenous knowledge of the four Tribal communities of Nagaland, one can discern that the Traditional system and western medicine exist side by side; the people would rather choose traditional medical system in the initial stage of an illness and depends on western medicines only if the case becomes severe or extreme. They have access to both these traditions, which is reflected in their health seeking behaviour. However, it seems that Traditional knowledge and practices of medicinal plants are vanishing from the modern society since younger people are not interested to carry on this tradition. Therefore, recognition of the ethnomedicinal knowledge and bioresource potential of the Naga people is important in motivating the local community people especially younger generation in carrying this noble tradition for future generations. It is also observed that some traditional plants in that area are fast eroding. The conservation efforts are needed for plantation and protection of these plants with maximum participation of local people. Establishment of medicinal plant gardens and *ex situ* cultivation initiatives using some commercially potential species is strongly recommended as a viable option of income generation to local people.

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