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PHYTO-PHARMACOLOGICAL ASPECTS OF ETHNOMEDICINAL PLANTS FOUND IN HIMALAYAN REGION: A SYSTEMATIC APPROACH TOWARDS DRUG NATURAL RESOURCES

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ABSTRACT

The northern part of India has great diversity of medicinal plants due to its geography and ecological marginal conditions. These traditional systems have been curing disease since 3,000 years. With the demand for these medicinal plants, most of the plant populations have been depleted, indicating a lack of ecological knowledge among communities using the plants. Thus, an attempt was made in this study of ethno medicinal plants, to determine their availability in the growing sites, and to inform the communities about the sustainable exploitation of medicinal plants in the wild. The Himalayas have a great wealth of medicinal plants and traditional medicinal knowledge. Medicinal plants have played an important role of primary health care system among the local people of Himalayan region. The present paper is a study of the traditional knowledge of medicinal plants and its use by local people of Himalayan region. Due to its unique geographical location and different climatic condition, it has rich biodiversity and variety of plant species. The present paper focuses about the indigenous knowledge of different medicinal plants used in the Himalayan region ethno medicinal uses of 70 medicinal plant species along with botanical name, family, local name,chemicals,part used and mode of treatment are given in this paper.

Keywords: Medicinal Plants, Traditional Knowledge, Ethnomedicinal, Phyto-Pharmacological

INTRODUCTION

Natural products, including plants, animals and minerals have been the basis of treatment of human diseases. History of medicine dates back practically to the existence of human civilization. The current accepted modern medicine or allopathy has gradually developed over the years by scientific and observational efforts of scientists. However, the basis of its development remains rooted in traditional medicine and therapies. The history of medicine includes many ludicrous therapies. Nevertheless, ancient wisdom has been the basis of modern medicine and will remain as one important source of future medicine and therapeutics. The future of natural products drug discovery will be more holistic, personalized and involve wise use of ancient and modern therapeutic skills in a complementary manner so that maximum benefits can be accrued to the patients and the community [1].

The traditional medicine is widely used for various human ailments. The usage of herbal medicine could be even traced right from the beginning of mankind. Man tried to know about the plants around him to satisfy his basic needs such as food, shelter and clothing. All plants in this planet are important because of its medicinal qualities. Traditional system of medicines has become significantly more popular all over the globe because of the effective and curative nature for chronic disease with less toxicity. Herbal medicines are not a simple task since many factors influence the biological efficacy and reproducible therapeutic effect [2].

Herbal medicines have been used in traditional medical practices for centuries. The usage of herbs and a medicinal plant to cure various diseases was in practice from the time immemorial. They have been used since ancient days as the plant and plant provide a useful source of medicine and pharmaceuticals that can be used to treat not only human disease but can also be used to enhance the animal production and health, food safety and quality [3].

Herbalism also known as herbal medicine is the study of botany and the use of medicinal plants. Plants have been the basis for medical treatments through much of human history and such traditional medicine is still widely practiced today. Herbal drugs consist of all the officially recognized system of India like Ayurveda, Yoga, Unani, Siddha, Homepathy, but still 70% of India's population still use Non-Allopathic system .so in this there is a compilation of some of the herbal medicines from different parts of India having different therapeutic use [4].

India is sitting on a gold mine of well recorded and well-practiced knowledge of traditional herbal medicine. But, unlike china, India has not been able to capitalize on this herbal wealth by promoting its use in the developed world despite their renewed interest in herbal medicines. This can be achieved by judicious product identification based on diseases found in the developed world for which no medicine is available; such herbal medicines will find easy acess into those countries. Traditional medicine tends to be practiced outside of allopathic medicine, which is the dominant system of medicine in the developed world.

Importance of traditional medicine for indigenous peoples and local communities

Traditional medicine also known as alternative, complimentary, and indigenous or folk medicine comprises knowledge systems that developed over generations within various societies before the era of modern medicine.

The world health organization (WHO) defines traditional medicine as "the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different culture, where explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness. The WHO has referred to these system as "holistic", i.e, that of viewing man in his totality within a wide ecological spectrum, and of emphasizing the view that ill health or disease is brought about by imbalance or disequilibrium of man in his total ecological system and not only by the causative agents and pathogenic evolution". Traditional medicine is not only a vital source of health care, but also an important source of income for many communities. Traditional medicine include all kinds of folk medicine, unconventional medicine and indeed any kind of therapeutic method that had been handed down by the tradition of a community or ethnic group.The discovery of most of the medicinal plants is done by pre industrial communities today, and many of them are involved in domestication, collection, cultivation and management of medicinal plant source. This activity support many indigenous people and local communities, and also help in the conservation of traditional medicine [5].

Traditional medicines have been used throughout the beginning of human history and played a significant role in the treatment and Prevention of various diseases. Ancient, Indian medicinal systems viz. Ayurveda, Siddha, Unani, Amchi and local health traditions provides a strong base for the use of a large number of plants in terms of safety and effectiveness leads for the prevention and treatment of different disease conditions. Herbs & herbal formulations are used as rejuvenators, 80% of the people in throughout the world currently uses herbal medicine for primary health care according to World health organization WHO) [6].

Herbal medicine is the important component of Ayurvedic, homeopathic, naturopathic, traditional Chinese medicine and Native American Indian medicine. As per WHO, 74% of 119 modern plant-derived pharmaceutical medicines are used in ways that correlated directly with their traditional uses [7].

METHODOLOGY

We order to summarize the current evidences regarding the medicinal plant a systematic review and of the literature were taken. The data was collected through secondary sources mainly from the website of Government, State Medicine Plant Board. References from research papers, books, articles were taken for interpretation of data. Along with intensive survey of locally available information on the use of traditional herbal medicine some collected through personal interview and literature survey. The purpose of the study was not only collection but also to know the relationship of medicinal plants with the community. (Table 1)

Table 1: Ethnomedicinal plants found in himalayan region [8-31] [Figures 1-4]

Sl.No	Scientific Name & Family	Local Name	Parts Used	Habitat	Chemical Constituents	Mode of administration	Therapeutic use
1	*Sida acuta* (Malvaceae)	Kareta	Roots	Assam	Beta-phenethylamines	Decoction& Infusion	Dyspepsia
2	*Solanum dulcamara* (Solanacea)	Khab-es-salab	Fruits	Sikkim	Solasodine and beta- solamarine	Decoction	Leprosy
3	*Vanda roxburghii* (Orchidaceae)	Nai-rasna	Roots	Tripura	Tannis, Sitosterol	Oil	Rheumatic disorders.
4	*Xanthium strumarium* (Compositae)	Shankhahuli	Whole plant	Assam	Beta-Caryophyllene	Decoction	Urinary& Renal complain

5	*Curculigo orchioides* (Amaryllidaceae)	Kalimurli	Roots	Assam	Curculigo	Powder	Impotence
6	*Anacardium occidentale* (Anacardiaceae)	Kaju	Kernel	Assam	Linoleic acid	Fermented Juice	Diuretic
7	*Cleomeviscosa L* (Capparidaceae)	Hulhul	Leaves	Sikkim	Palmitic acid, Stearic acid	Paste	Wounds & Ulcers
8	*Terminalia alata* (Combretaceae)	Asan	Bark	Meghalaya	Arjunetin, Ellagic acid	Decoction	Diarrhoea & Ulcers
9	*Lagenaria Siceraria* (Cucurbitaceae)	Kadutumbi	Leaf	Manipur	Eucalyptol,Palmitic acid	Decoction	Jaundice
10	*Caesalpinia decapetala* (Fabaceae)	Aila	Whole plant	Assam	Quercetin, beta-Sitosterol	Decoction	Carminative
11	*Coix Lachryma* (Poaceae)	Gurgur	Roots	Assam	beta-Sitosterol	Juice	Menstrual disorders
12	*Mukia maderaspatana* (Curcurbitaceae)	Aganaki	Roots	Tripura	Dichloroacetic acid,saponins	Decoction	Flatulence
13	*Murraya koenigii* (Rutaceae)	Karay pak	Roots	Sikkim,	Coumarin, Carbazole	Infusion&Decoction	Vomiting
14	*Rubia cordifolia* (Rubiaceae)	Manjit	Roots	Nilgiris	Rubiadin, Quinine	Decoction	Diuretic& Astringent
15	*Sesamum indicum* (Pedaliaceae)	Til	Seeds	Assam	Sesamolin, Sesamin	Paste (with water&butter)	Bleeding piles
16	*Hymenodictyon orixense* (Rubiaceae)	Bhurkur	Barks	Meghalaya	Glycoside loganin	Decoction	Diarrhoea& Antiperiodic.
17	*Aconitum deinorrhizum* (Ranunculaceae)	Safed vish	Roots	Kumaon	Aconitum,Alkaloids	Powder	Rheumatism &Cholera
18	*Ageratum conyzoides* (Asteraceae)	Koobhi	Roots	Manipur	Beta- pinene, Beta- phellandrene	Juice	Anthelmintic
19	*Carissa carandas* (Apocynaceae)	Karonda	Roots	Tripura	Ursolic acid,Oleanolic acid	Decoction	Cough& Diarrhoea
20	*Casearia graveolens* (Flacourtiaceae)	Chilla	Roots	Assam	Alkaloids, Flavonoids	Paste	Piles
21	*Abelmoschus moschatus* (Malvaceae)	Latakasturi	Seeds	Nagaland	Myricetin, Flavonoids	Powder	Digestive
22	*Artocarpus hirsutus* (Moraceae)	Ayani	Bark	Manipur	Stilbenoids, Flavonoids	Infusion	Heal sores& Pimples
23	*Azolla pinnata* (Salviniaceae)	Pana	Roots	Assam	Protein, Calcium	Juice	Diuretic
24	*Abies spectabilis* (Pinaceae)	Tallispatra	leaves	Assam	Abietanes, Flavonoids	Juice	Haemoptysis, Cough
25	*Cedrus deodara* (Pinaceae)	Deodara	Woods	Assam	Terpineol, Anethole	Decoction	Dysentry, Fever
26	*Leea alata Edgew* (Leeaceae)	Bon-ou	Roots	Assam	Flavonoids Alkaloids	Decoction	Cold& Cough
27	*Toddalia asiatica* (Rutaceae)	Dahan	Bark	Manipur	Zanthocadinanine, Pimpinellin	Powder	Antipyretic , Bitter.

28	*Vanda coerulae* (Orchidaceae)	Bhatou phul	Leaf	Assam	Stilbenoids	Juice	Bronchitis
29	*Renanthera imschootiana* (Orchidaceae)	Red Vanda	Leaf	Assam	Eucomic acid, Phenolic Compound	Paste	Skin disease
30	*Aquilaria malaccensis* (Thymelaeacea)	Agarwood	Wood	Assam	Alpha- guaiene, Caryophellene	Oil	Sirosis, Perfumes
31	*Hibiscus manihot* (Malvaceae)	Usipak	Bark	Assam	Cannabiscitrin, Adenosine	Paste	Wounds & Cuts
32	*Abutilon indicum* (Malvaceae)	Pera- petari	Whole plant	Assam	Carbohydrates,Steroids	Powder	Demulcent, Analgesic
33	*Acalypha indica* (Euphorbiaceae)	Mukuta –manjari	Leaf	Assam	Alkaloids, Anthraquinone	Powder	Laxative, Diuretic
34	*Acorus calmus* (Araceae)	Bos	Rhizome	Assam	Saponins, Lectins	Powder	Bronchitis and Sedative
35	*Alpinia galanga* (Zingiberaceae)	Kanghu	Rhizome	Manipur	Cineole, Camphor	Powder+ tabacco leaves	Piles
36	*Punica grantum* (Onagraceae)	Ka-phoi	Fruit/leaf	Manipur	Punicalagins, Ellagitannin	Decoction	Diarrhea
37	*Phyllanthus emblica* (Labiateae)	Heigru	Fruit	Manipur	Ascorbic acid, Kaempferol	Deccoction	Asthama
38	*Oxalis corniculata* (Oxalidaceae)	Ram Ansur	Leaf	Manipur	Potassium Calcium	Decoction	Arthritis
39	*Psidium guajava* (Myrtaceae)	Pongatol	Fruit	Manipur	Sitosterol, Ursolic acid	Fruit + salt	Dysentry
40	*Ficus glomerata* (Moraceae)	Heibung-asinba	Leaf	Manipur	Saponin, Tannin	Fruit+ leaf+heat+ apply	Body Swelling
41	*Centella asiatica* (Apiaceae)	Peruk	Whole plant	Manipur	Centellose, Asiaticoside	Decoction	Hypertension
42	*Dillenia indica* (Dilliniaceae)	Ahutenga	Fruit pulp &leaf	Arunachal pradesh	Quercetin, betulin,free amino	Decoction	Wound healing/anti-dandruff.
43	*Mussaenda glabrata* (Rubiaceae)	Dhobini phul	Roots	Sikkim	Hexadecanoic acid,ester	Roots+ Cow urine	White leprosy
44	*Moringaoleifera* (Moringaceae)	Sajana	Pods & leaves	Arunachal pradesh	Catechol,steroids,sugar	Juice	Liver disorders
45	*Solanum khasianum* (Solanaceae)	Thitbya-ke	Root	Arunachal pradesh	Solasodine ,Glyco-alkaloid	Decoction	Malaria, Anti- fertility
46	*Swertia chirayita* (Gentianaceae)	Chirata	Whole plant	Arunachal pradesh	Sawertiamarine, Mangeferin	Decoction	Fever, Anti-hepatitis B
47	*Piper betel* (Piperaceae)	Ritik-rhinik	Leaf	Arunachal pradesh	Eugenol,thiamine,cineole	Leaf+oil+ rub	Stomach ache
48	*Laggera pterodonta* (Asteraceae)	Dindo eh	Whole plant	Arunachal pradesh	n-tricontane, linoleoyl chloride	Powder +oil	Antihelmintic.
49	*Betula alnoides* (Betulaceae)	Dienglieng	Root	Meghalaya	Geranic acid Terragon	Extract	Indigestion

50	*Cinnamomum tamala (*lauraceae)	La tyrppad	Leaves	Meghalaya	a- pinene, Myrcene	Leaves+ fried in oil	Toothache
51	*Costus speciosus* (Zingiberaceae*)*	Sla pangmat	Rhizome	Meghalaya	Diosgenin, Succinic acid	Powder	Bronchitis
52	*Colocasia esuclcenta* (Araceae*)*	La wang	Leaves	Meghalaya	Anthocyanins, Cyanidin	Cooked corms	Rickets
53	*Citrus latipes* (Rutaceae)	Sohkymphor	Fruit'	Meghalaya	Polysaccharide	Juice	Appetizer, Ringworm
54	*Buddleja macrostachya* (Buddlejaceae)	Jalong krem	Leaves	Meghalaya	Apigenin, Glucopyranoside	Juice	Venereal disease
55	*Rubus ellipticus* (Rosaceae)	Soh-shiah	Fruits	Meghalaya	Gallic acid, Catechin	Crushed fruits	Dysentry
56	*Zingiber zerumbet* (Zingiberaceae)	Ing-blei	Rhizome	Meghalaya	Zerumbone, Limonene	Fresh rhizome	Relive stress
57	*Cucurbita pepo (*Cucurbitaceae)	Tangut	Seeds, Pulp	Sikkim	Cucurbitacins, Vitamins	Powder	Deworming agent
58	*Ficus carica* (Moraceae)	Mongozono	Fruit	Nagaland	Aldehydes	Raw ripe fruits	Intestinal Ulcer
59	*Paederia foetida* (Rubiaceae)	Sizzii	Leaves	Nagaland	Flavonoids, Stigmosterol	Decoction	Gastric ulcer
60	*Polyalthia longifolia* (Annonaceae)	Mongmong	Leaves	Nagaland	Di-terpenes, Alkaloids	Decoction	Carminative
61	*Bergenia ciliata* (Saxifragaceae)	Pakhanbed	Rhizome	Sikkim	Gallic acid & Tannic acid	Powder	Pulmonary affections
62	*Clematis buchananiana* (Ranunculaceae*)*	Pinsasy lahara	Root	Sikkim	Triterpenoid, Saponin	Juice	Headache, Sinusitis
63	*Diplazium polypodioides* (Athyriaceae)	Kaliningro	Root	Sikkim	Oleic acid	Juice	Dysentery
64	*Drymaria Cordata* (Caryophyllaceae)	Abijalo	Whole plant	Sikkim	Flavonoids & Phenols	Extract	Anti-febrile
65	*Kaempferia rotunda* (Zingiberaceae)	Bhui champa	Rhizome	Sikkim	Chalcones, Quercetin	Paste	Bone-fractures& swelling
66	*Musa balbisiana* (Musaceae)	Ban kera	Pseudo-stem	Sikkim	Cineole, trepenoids	Juice	Oral infection
67	*Orchis chusua* (Orchidaceae)	Sayno panchaunlay	Fresh root	Sikkim	Flavonoids	Paste	Cuts &mild fractures
68	*Eleusine coracana* (Poaceae)	Kodo	Grain	Sikkim	Elusinin	Decoction	Measles, Small pox
69	*Phytolacca acinosa* (Phytolaccaceae)	Jaringo	Fresh leaves	Sikkim	Phytolaccine, Phytolaccotoxin	Decoction	Tonsillitis
70	*Oroxylum indicum* (Bignoniaceae)	Totala	Root bark	Sikkim	Phenols,Tannins	Powder	Digestive tonic

Figure 1: Images of ethnomedicinal plants

Figure 2: Images of ethnomedicinal plants

Figure 3: Images of Ethno-medicinal plants

Figure 4: Images of Ethno-medicinal plants

CONCLUSION

The Himalayan people have a close relationship with nature. Food, fruits, fodder, medicinal plants and their health care they are fully dependent upon forest. Local people in this region, use these traditionally available medicinal plants for health and believe that these are easily available, less expensive and have no side effects as compare to modern medicine The present situation of traditional knowledge regarding to medicinal plants everywhere is an issue as the traditional knowledge is gradually declining and disappearing from the countryside. In north Indian medicinal plants

have strong acceptance in spiritual activities by inhabitant communities, who worshiped the plants in the form of god, goddesses, and minor deities. Due to the unavailability of modern health facilities, poverty, connectivity with urban centre, awareness, etc. people in rural areas are still relying on traditional medicines for their health care. Primary healthacare uses wild plants having medicinal value due to lack of modern medicines. Due to the so many issues like deforestation, impact of tourism on natural vegetation of this region, population explosion & heavily construction and climatic change in Himalayan region .We have to make proper policies and do implement these to conserve the forests and medicinal plants . The barren land Fallow land should be used for the protection and cultivation of medicinal plants.

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