Traditional Uses of Medicinal Flora for Primary Health Care: A Case Study of Chaukhutia Block of Almora District, Uttarakhand (India)

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ABSTRACT: Abstract: An ethno-botanical survey was carried out during the year 2010 in Chaukhutia Block of Almora district in Uttarakhand State to document the traditional medicinal system of the local people. During this study, a total 68 species of medicinal plants belonging to 63 families were listed from the forest area of Chaukhutia Block. Out of these species, 20 species are commonly being used by the local people for the purpose of primary health care.

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1. Introduction

Ethno-medicine is the system of maintaining health and curing diseases based on folk beliefs and traditional knowledge, skills, methods and practices. From ancient time human societies have been depending on plants and plant products for various remedies. The origin, evolution, values and efficacy of almost every traditional system of medicine such as Ayurveda, Unani, Homeopathy, Siddha and even Allopathy, based on the utility of plants **(Shiva and Shiva, 2006)**.

About 2000 plant species are being used in the preparation of Ayurvedic medicines, while 1121 species, 751 species and 337 species of plants are being utilized in Siddha, Unani and Tibetan system of medicines, respectively **(Joshi, 2002 & Kala, 2005)**.

Inspite of the tremendous progress in medical science, plants continue to be an important source of drugs throughout the world. Medicines of plant origin are finding wider and greater quantitative as well as qualitative uses all over the world as also is reflected with ever increasing commercial ventures **(Joshi, 2002)**. About 25% of drugs are derived from plants and many other are formed by the prototype compounds isolated from plant species **(Kala *et al.* 2006)**. During past two decades reliability and usage of herbal product has gained importance, due to the side effects and complications of many chemical and synthetic allopathic medicines. At present about 65% of the Indian population depend on the traditional system of medicines **(Prashantkumar and Vidyasagar 2008)**.

2. Materials and Methods

An extensive survey was made during 2009 to find out the bio-diversity of medicinal flora in Chaukhutia Block of Almora district. This picturesque place derives its name from a Kumaoni word "Chakhuta" which means four feet. It has been so named because four ways lead out from it and the entire region can be easily accessed from here. It lies between latitude 29^0 53.1' N and longitude 79^0 21' E, and situated at an elevation of 937 m from the sea lavel.

The information of traditional uses of medicinal plants was gathered by consulting and interviewing the local herbal healers and local people using semi structured questionnaire. The heads of the family of 100 randomly selected houses were consulted to obtain information about the traditional methods used for primary health care. Of the people consulted, 70% were above 50 years of age. Three local herbal healers (locally known as Vaidya); Mr. Madhusudan Binwal (65 yrs), Mr. Hari Singh Bisht (57yrs) and Mr. Ummed Singh Rana (42yrs) were also consulted to gather valuable information about the herbal formulations they used to cure various ailments.

The identification of plants was done using the literature (Dhiman, 2003; Sharma, 2003; Kanjilal, 2004; Bedi 2005; Purohit & Vyas, 2005) and by the help of local herbalist. The taxonomist of Gurukula Kangri University, S.S.J. Campus Almora. Herbaria of GBPHID, Kosi- Katarmal, Almora were also consulted to cross check the identity of plant species.

3. Results

During the present study, a total of 68 Species of medicinal flora, including 26 trees, 14 shrubs and

28 herbs were listed from this location. The tree canopy in this area consists *Acecia catechu*, *Aegle marmelos*, *Albizia lebbek*, *Alstonia scholaris, Azadirachta indica, Bauhinia variegata, Bombax ceiba, Butea monosperma, Cassia fistula, Emblica officinalis, Eucalyptus globules, Ficus carica, Ficus palmata, Ficus racemosa, Ficus religiosa, Juglens regia, Mallotus philippinensis, Melia azedarach, Prunus cerasoides, Pinus roxburghii, Punica granatum, Quercus leucotrichophora, Rhus parviflora, Shorea robusta, Terminalia bellirica, Toona ciliata*. The shrubs consists of *Agave americana, Artemisia nilagirica, Calotropis procera, Citrus medica, Datura stramonium, Euphorbia ligularia, Justicia adhatoda, Murraya koenigii, Ricinus communis, Solanum indicum, Tinospora cordifolia, Vitex negundo, Woodfordia fruticosa, Zanthoxylum aromatum*. The herbaceous flora of this site represented by *Abrus precatorius, Abutilon indicum, Achyranthes aspera, Acorus calamus, Boerhaavia diffusa, Callicarpa macrophylla, Cannabis sativa, Cassia tora, Celastrus paniculata,Centella asiatica, Cissampelos pareira, Cynodon dactylon, Cyprus rotunds, Desmodium gangeticum, Dioscorea bellophylla, Eclipta prostrata, Mimosa pudica, Morina polyphylla, Mucuna pruriens, Ocimum basilicum, Plumbago zeylanica, Salvia lanata, Semecarpus anacardium, Sida cordifolia, Solanum nigrum, Solanum surattense, Uraria picta, Urtica dioica*.

The investigation reveled that medicinal plants of 20 species are commonly used for primary health care. The information about the traditional uses of the medicinal plants in skin problems, dental problems, joint pain, cough, dysentery and urinary disorders has been compiled in Table-1.

Table 1: Medicinal plants used for Primary health-care

S.No	Binomial	Local/common Name	Family	Traditional Uses
1. Skin Diseases				
1.	*Achyranthes aspera* Linn.	Saji / Prickly Chaff-flower	Amaranthaceae	The paste of leaves are used externally in skin eruption.
2.	*Albizia lebbek* Benth.	Siris / Woman Tongue Tree	Mimosaceae	Seed paste is applied for skin diseases.
3.	*Calotropis procera* Br.	Aka / Sodom Apple	Asclepiadaceae	Latyx is used in various skin diseases
4.	*Eucalyptus globules* Labill.	Safeda / Eucalyptus	Myrtaceae	Oil of leaves is antiseptic and used as an ointment for burns.
5.	*Ocimum basilicum* Linn.	Tulsi / Holy Basil	Lamiaceae	Leaf juice is considered as an excellent nocturum and used for ring worm and other skin diseases.
6.	*Plumbago zeylanica* Linn.	Chitto / White Leadwort	Plumbaginaceae	Paste of roots is used externally to cure white spots on skin.
7.	*Woodfordia fruticosa* (L.)Kurtz.	Dhaula / Fire Flame Bush	Lythraceae	Paste of flower is applied externally to cure various skin diseases and to heal wounds.
2. Dental Problems				
8.	*Acorus calamus* Linn.	Vacha / Sweet flag	Araceae	Paste of rhizome is applied on painful teeth and gums.
9.	*Azadirachta indica* A. Juss.	Neem / Bead Tree	Meliaceae	Young twigs are used as toothbrush to make teeth strong and to cure pyorrhoea.
10.	*Juglens regia* Linn.	Akhoda / Walnut	Juglancaceae	Oil is used in preparation of traditional tooth powder to cure dental problems.
11.	*Zanthoxylum aromatum* DC.	Timbru / Bamboo leaved Prinklish Ash	Rutaceae	Powder of fruits is used as a remedy for toothache. Small twigs of the branches are used as the brushing sticks in case of toothache.
3. Pain / Joint Pain				
12.	*Cannabis sativa* Linn.	Bhang / hemp	Cannabiaceae	Warm decoction is used in massage in case of backbone pain
13.	*Datura stramonium* Linn.	Dhatura / Mad Apple	Solanaceae	Seeds are boiled with mustard oil and applied externally on joints having pain.
14.	*Ricinus communis* Linn.	Arand / Castor- bean	Euphorbiaceae	Oil of seeds is used externally in case of joint pain.
4. Cough / Asthma				
15.	*Eclipta prostrata* Roxb.	Bhringraj / Eclipta	Asteraceae	One teaspoon ful juice of crushed areal parts is mixed with equal amount of honey and it is given twice a day to cure cough.
16.	*Punica granatum* Linn.	Anar / Pomegranate	Punicaceae	Powder of dried rind parts is taken orally with lukeworm water to cure cough.
17.	*Solanum nigrum* Linn	Makoi / Black Nightshade	Solanaceae	To cure cough, 4-5 ripe fruits are given orally to children.
18.	*Solanum surattense* Burm. f.	Kanteli / Yellow Berried Nightshade	Solanaceae	Fruits are burnt and its smoke is inhaled in cough and asthma.
5. Dysentery				

19.	*Achyranthes aspera* Linn.	Saji / Prickly Chaff-flower	Amaranthaceae	Powder of dried roots is used to cure dysentery.
20.	*Albizia lebbek* Benth.	Siris / Woman Tongue Tree	Mimosaceae	Bark decoction is used to cure dysentery.
21.	*Solanum nigrum* Linn	Makoi / Black Nightshade	Solanaceae	Berries are given orally in dysentery.
6. Urinary Diseases				
22.	*Boerhaavia diffusa* Linn.	Punarva / Spreading Hogweed	Nyctaginaceae	The decoction of leaves is used in urinary diseases.
23.	*Cynodon dactylon* (Linn.)Pers.	Dubra/ Bermuda grass	Poaceae	Cold infusion of the grass is useful in the irritation of urinary organs.
24.	*Solanum nigrum* Linn	Makoi / Black Nightshade	Solanaceae	Berries are given orally to cure urinary disorders.

4. Discussion

Man has been in intimate association with the vegetation of its surrounding, down through the human civilization. From the very beginning of human beings on the earth, they were dependent on the plants for food, shelter and cloths. This dependents increased with the phase of time almost for everything and even to the medicines, cosmetics and beverages etc. Rural communities, almost through out the mountaneous areas have developed various techniques for utilization of plants according to their needs. Traditional Himalayan medicine has affected the lives of poor people around the world. Approximately 80% population of the developing countries still depend on the traditional and folk medicinal system **(Gangwar and Joshi, 2009)**.

About 70-80% inhabitants of IHR residing in rural area and still dependent on the traditional Vaidyas and traditional herbal medicines for treating diseases due to isolation and relatively poor acess to modern medical facilities **(Kala, 2005)**. The Traditional knowledge of Himalayan medicine is a better illustration of poor communities which fight even incurable diseases through the traditional methods. They usually prepare herbal medicines using the plant parts like resin, bark, root, leaves, fruits, flowers etc. to cure them and their livestock through traditional methods.

Vandebroek *et al.* (2008) reported that Quechua community of rural Bolivia has developed traditional system of health care as a complementary way to the biomedical health care, even for the chronic diseases like arthritis, and serious respiratory diseases. Communities of Native inhabitants have used a variety of plants traditionally since ancient time. Wild economic plants constitute a large portion of food consumed by local inhabitants in tribal and hilly areas. The climatic and geographical variation, rich biodiversity, healthier environment of IHR also inspire the people for cultural and spiritual aspects. Because of this their customs, religious rituals and cultural activities are also related with their surrounding vegetation. The various plant species are closely associated with the folk tales and folk songs of the people of IHR **(Manral and Pande, 2004)**. The role of plants in the religious and cultural rituals of the locals of Himachal Pradesh is deeply described by **Negi and Dutt (2007)**.

Uttaranchal state covering Kumaon and Garhwal regions is known for its rich vegetation and cultural heritage. The inhabitants of this state are using various plants for food, medicines, cosmetics and even as soaps and detergents **(Mehta and Bhatt, 2007)**. The majority of the human population in Uttaranchal state (approximately 78%) live in rural areas. There are very few primary health care centres in the state. In the study area, some people like Traditional Vaidyas, Priests and Brahmins are known for this traditional medicines, but their knowledge is only verbally transmitted to next generation, which is the main cause of disappearing of these traditional and folk medical knowledge. **Akerreta *et al.* (2007)** has pointed out that modernization and lack of documentation has lead to the erosion of ethnobotanical and medical knowledge in western parts of Pyrenees.

The most frequently employed plant parts are leaves (35%), followed by fruits (30%), roots (15%), seeds (15%), flower (5%), and other parts (15%). The practice of exploiting perennial plant parts, such as roots of slow growing woody species, can result in a decline. During the present study, the majority of the respondents interviewed (70%) employ herbal treatment as first line of treatment. If the patient does not improve, then medical practitioner is consulted, while rest (30%) seek proper services of qualified degree holder doctors when they fall sick. It was also observed that local people have great faith in their traditional system of medicine and still depend on the plant resources to cure various ailments. But it was also found that rich people and new generation is ignoring or least interested in ancient traditional knowledge of healing. This is not a good sign for existence of the traditional healthcare knowledge.

The demand of medicinal plants by the pharmaceuticals is continuously increasing day by day. The world market for plant-derived chemicals-pharmaceuticals, fragrances, flavours and colour

ingredients, alone exceeds several billion dollars per year **(Joshi, 2002)**. It is estimated that the global trade in medicinal plants is US $ 800 million per year **(Ghosh, 2004)**. Over collection of medicinal plants for supplement of this increasing demand has been identified one of the most severe threats to medicinal plant diversity.

Himalayan region harbours precious land and water resources and recognize as one of the richest habitats for medicinal plants. But due to the pressures of market forces and globalization, the rich diversity of indigenous and traditional knowledge systems of the Himalayan region are gradually passing to oblivion. **Kala (2007)** discussed the dependence of local people of Uttarakhand on the medicinal plants, which cause the problem of their existence. The plant materials used in these traditional medicinal systems are usually collected from surroundings forests and localities. Sometime, due to lack of awareness people destroy whole plant, instead of the plant part they need for the medicines.

Mostly grazing cattles also eat up a variety of these herbal plants, on account of scarcity of the fodder plants and grasses, which create the danger of extinction of these valuable medicinal plants. During last 2-3 decades, this hilly area has undergone a lot of developmental program based activities like road construction, installation of power supply and enhancement of communicable services which as a natural consequence has lead to the loss of natural habitats, soil erosion, river mending, siltation etc. The main reason behind the depletion of medicinal plants in Almora district is the indiscriminate utilization and over exploitation of the natural habitats **(Sharma and Joshi, 2008)** for a number of community requirements and on the name of development in the adjoining areas.

5. Conclusion

These traditional herbal medicines, which are almost free, are not only limited in the rural or interior of hilly areas, but are further declining in their availability on account of increased demand and vigorous exploitation of the forest resources. Therefore, it is necessary to research on these medicines and make available to the all parts of country, through further and enhanced cultivation and creating protection zones for such highly specific plants. During the study period, it was also noticed that elder people are full of folk medicinal knowledge and traditional herbal therapies than the younger generation of today. The main reason behind this is the secretive nature of local people. They are hesitant to disclose the preparatory method of magic herbal medicines to any one, even their family members, because they think that if they disclose it to any one, the effective medicinal qualities of the herbs shall be lost or would turn ineffective. As a consequence, with the death of the elder knowledgeable persons in these remote rural areas, this traditional knowledge may also lost forever. Therefore, a systematic documentation is urgent before, the few sources and treasure sites face extinction. This can be achieved by creating awareness among the simple and orthodox people in these respective areas.

This study has generated some basic data for further studies aimed at conservation of bio-diversity and traditional knowledge system. Such traditional knowledge is a wealth for the human being and has great value in the context of today's Intellectual Property Rights (IPRs) scenario.

The following points are important for the betterment of medicinal plant sector:

1. The indigenous medicines should be appropriately priced.
2. Farmers should be encouraged to participate in training programme, which will facilitate them in implementing modern techniques of cultivation, collection, processing, storage and packaging of crude drugs.
3. The government organization and research centres should maintain complete documentation and record of such crude drugs, which will help in conserving and preserving indigenous knowledge of the medicinal flora.
4. Government should encourage research in the field of medicinal plants by appreciating appropriate funds so as to nurture and foster's economy at the international level.

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