

Revitalizing Traditional Herbal Therapy by Exploring Medicinal Plants: A Case Study of Uttarakhand State in India

Chandra Prakash Kala

G.B. Pant Institute of Himalayan Environment & Development

Kosi, Almora – 263 643 (Uttarakhand), India

E-mail cpkala@yahoo.co.uk or cpkala@rediffmail.com

Forests play key roles in the lives of people living in both mountains and lowland areas by supplying fresh water and a diversity of valuable forest products. Among the various kinds of forest products available to local people, the use of plant species for therapeutic purposes has gained a tremendous importance in the present century. The importance of plants used in therapy can be evaluated by the estimation of the World Health Organization (WHO) that the present demand for medicinal plants is about US\$14 billion a year, and that the demand for medicinal plant-based raw materials is growing at the rate of 15–25% annually. According to the WHO estimates, the demand for medicinal plants is likely to increase from the current \$14 billion a year to \$5 trillion in 2050. With the growing world demand, the export market for medicinal plant species appears to be growing faster than the Indian domestic market.

In India, however, the use of medicinal plants is a centuries-old tradition, and approximately two million traditional health practitioners still use medicinal plants for curing various ailments (Venkatesh 2002)—of these practitioners, a sizeable number regard the Himalayas as a storehouse of varieties of herbal medicines. Located in the Himalayas, the vegetation wealth of the Uttarakhand state of India has received significant attention throughout the ages for curing various chronic human ailments (Gaur 1999). Because they are both a local health commodity and also expected to meet the growing world demand, the majority of medicinal plant species experience high pressures due to over-collection from wild. At the same time, the traditional knowledge on the use of less important medicinal plants and the techniques of making many herbal formulations have declined over the past few decades due to lack of awareness and spread of allopathic medicines (Kala 1998a).

Recognizing the present escalating demand for herbal medicines, and also in order to reduce the possibility of bio-piracy and to protect the rights of traditional herbal healers, there is an urgent need to document the various uses of plant species (Udgaonkar 2002). Plants are the major ingredients in most of the medical formulations developed by the traditional healers. Realizing the growing importance of plant-based formulations, the present study aims to document the medicinal plants, their uses, and the various formulations developed by mixing many plant species together. Attempts also were made to find out the possible causes of decline in tradition within the indigenous communities, along with exploring ways to revitalize the tradition.

Study Area

The Uttarakhand State lies in the central part of the Indian Himalayas between 28°43' to 31°8' N and 77°35' to 81°2' E and is comprised of thirteen districts. Himachal Pradesh borders the state on the northwest, Tibet on the north, Nepal on the east, and Uttar Pradesh on the south (Fig. 1). The state has two commissionaires, the Garhwal and the Kumaon. The total

geographical area of the state is 53,485 km² that falls between the elevation ranges of 210 m to 7,817 m. The state is endowed with some high snow-laden peaks, such as Nanda Devi, Chaukhamba, Neelkanth, Kamet, Nilgiri, Gauri, Trishul, and Panchachuli. The total human population is around 8,479,562, of which 78% are classified as living in rural areas. About 20% of the state population has been classified under the categories of Schedule Castes and Schedule Tribes, and draw the associated benefits marked separately for the backward communities by the Government of India.

Uttaranchal covers about 12.18% of the total Indian Himalayas, and about 45% of its total area falls under different forest types. Of this forested area, 19,023 km² has dense forest and 4,915 km² has open forest. Scrub vegetation covers an area of 598 km² in the state (Forest Survey of India 2002). Some of the major vegetation types classified along the altitudinal gradient are tropical, sub-tropical, temperate, sub-alpine, and alpine (Kala 2003). These forest types are the repositories of valuable medicinal plant species, many of which belong in the rare and endangered categories.

Diverse ethnic groups—such as the Tolchha, Marcha, Jad, Sauka, Raji, Jaunsary, and Boxa, which have developed their own cultures based on available natural resources—characterize the socio-cultural fabric in the state. The state hosts important religious sites and pilgrim centers (e.g., Panch Kedar, Panch Badri, Gangotri, Yamunotri, Hemkund, and many temples of goddess Nanda Devi); hence, Uttaranchal also is known as the “Abode of Gods.” The state is a favorite tourist destination for both national and international visitors. Besides tourism, agriculture and animal husbandry are the major basis for the local economy.

Methodology

Survey Methods:

A thorough literature survey was made to compile existing information on the medicinal plants and their uses (e.g., Kritikar and Basu 1984; CSIR 1989; Pandey 1995; Gaur 1999; Anonymous 2002; Kala 1998ab, 2002ab, 2003, 2004ab). In addition, semi-structured open-ended questionnaire surveys were carried out among different traditional herbal healers or practitioners of the Ayurveda (*Vaidyas*) across the state residing from tropical to alpine zones to gather data on the uses of medicinal plant species and the preparation of various herbal medical formulations. A total of sixty such traditional herbal healers were interviewed using semi-structured open-ended questionnaires. For the every plant the interviewees mentioned, they were asked about its therapeutic uses and the part(s) of the plant used. For the identification of these medicinal plants, field trips also were made with *Vaidyas*.

Methods for Analysis:

The collected data were analyzed for the number of ailments treated by each respective plant species. Since there were several types of ailments, with a view to incorporating all the ailments in the analysis, the medicinal plants were arranged into twelve broad classes of diseases:

1. dermatological problems
2. gastrointestinal disorders
3. generalized body ache
4. respiratory disorders
5. urogenital problems

6. bone diseases/fracture
7. blood purifiers
8. general health and hair tonic
9. anti-poison
10. eye diseases
11. mental/psychological disorder
12. others

Medical practitioners were consulted in classifying all the documented 135 types of ailments into these twelve broad classes. The 243 recorded medical formulations also were arranged into these twelve classes of diseases. The data were quantified by counting the number of species and the number of herbal medical formulations used in curing the various ailments falling in each broad class of disease.

Results and Discussion

Generally, the traditional herbal healers or *Vaidyas* in Uttarakhand State of India are the followers of Ayurveda, “a science of living.” They have discovered a number of plant species for curing different ailments. During the present study, a total of 964 species of medicinal plant were documented growing in the different parts of Uttarakhand (medicinal plants list retained with the author). Of the 964 medicinal plant species about 45% were documented through primary surveys and interviews with traditional herbal healers (see Table 1). These medicinal plant species are used in making of different herbal medical formulations or drugs. In the preparation of such drugs, different parts of medicinal plant species—such as flower, fruit, root, tuber, bark, stem, and leaf—are used. In the majority of cases, the underground plant parts (e.g., root, rhizome, and tuber) were used, followed by leaf and seed.

The recorded plant species were used in curing about 135 ailments. Most of the plant species were used to cure more than one ailment. Since the number of ailments is quite high, in order to describe and to include all of them in the analysis, the ailments were categorized and grouped into twelve broad classes of diseases. The highest numbers of plant species were documented to cure dermatological problems (212 species), followed by gastrointestinal

Table 1: General profile of the various components of the study.

<i>Vaidya</i> interviewed	60
Age group in <i>Vaidyas</i>	
• Young (16-25 years)	9
• Adult (26-45 years)	22
• Old (>46 years)	29
<i>Vaidyas</i> having disciples	24
Number of plants documented	964
Number of formulations documented	243
Number of diseases treated	73

disorders (192 species), generalized body ache (170 species), and respiratory disorders (102 species) (see Table 2).

Based on the number of uses, it was estimated that *Vitex negundo* was the most important species, used in the treatment of more than forty-eight ailments. The second most important species was *Azadirachta indica*, which was used for curing forty kinds of ailments; followed by *Woodfordia fruticosa*, *Centella asiatica*, *Aegle marmelos*, *Cuscuta reflexa*, *Butea monosperma*, and *Phyllanthus emblica*, respectively. A total of 243 herbal medical formulations were documented during the survey and/or interviews conducted among sixty traditional *Vaidyas* in the state. Plants were the major ingredients in these medical formulations. The highest number of formulations was documented for curing cough and cold, followed by skin diseases, dysentery, and toothache.

Table 2. Various classes of diseases and the number of species used in their curing and number of medical formulations developed by traditional *Vaidyas*.

Sl. No.	Ailments	No. of plant species used	No. of medical formulations documented
1	Dermatological problems	212	22
2	Gastrointestinal disorders	192	55
3	Generalized body ache	170	59
4	Respiratory disorders	102	7
5	Uro-genital disorders	56	26
6	Bone diseases/fracture	49	20
7	Blood purifiers	47	12
8	General health and hair tonic	41	5
9	Anti-poison	38	7
10	Eye diseases	27	15
11	Mental/psychological disorder	19	9
12	Others	6	2

The fundamental principles of preparing drugs by *Vaidyas* are often combined with philosophy, religion, and various ingredients. On the basis of nature and origin, the drugs are classified into three groups: (1) vegetable, (2) animal, and (3) metals/minerals. Drugs of vegetable origin are again divided into four groups based on the use of plant parts: (1) prepared from fruits, (2) prepared from flowers and fruits, (3) prepared from creepers, and (4) prepared from annuals. The drug is developed and given to the patient in the form of juice, powder, decoction, paste, jam, and/or pills. The Ayurvedic system of medicine pursues the holistic approach and does not aim to cure only the affected organs but to find out the origin and the causal factor of the disease, in order to eradicate the disease at its root (Dash 1999).

Unfortunately, the traditional system of herbal use is not very popular with the younger generation. In the past, the indigenous communities had a self-regulating system that was interwoven in such a way so that each individual could receive certain economic benefits from his profession. Mostly the traditional *Vaidyas* were marginal farmers and they provided their services free of cost. In return, the villagers helped the *Vaidyas* with their agricultural work and also offered some donation in the form of cereals, pulses, and vegetables. Traditionally, the *Vaidya* profession was valued as a matter of philanthropy and therefore the introduction of fees for any kind of treatment was highly discouraged. Realizing that health was an essential need, it was thought that if fees were introduced in the profession then the poor could be denied treatment. This notion still persists in some localities of the state for some specific treatments; for example, some traditional healers do not accept anything from a person who has undergone treatment for snakebite under their supervision.

With changing life styles and introduction of immediate economic return in terms of cash, the traditional values related to the profession of *Vaidyas* started changing. The younger generation of *Vaidyas* might have started visualizing fewer opportunities in the profession to become wealthy. This resulted in a sharp decline in the number of recognized *Vaidyas*. Nonetheless, the knowledge of herbal use is so deeply rooted in society that there are still number of women and men in the villages who know the healing properties of many medicinal plant species. The loss of traditional knowledge on preparing medicine is due to the decline in number of *Vaidyas* coming forward to adopt this profession. In addition, the survey results indicate that the practice of individual healers of identifying plants and preparing various formulations themselves for the use of their patients has been declining rapidly. Today, due to rapid socio-economic changes and urbanization, most of the *Vaidyas* largely depend on the products supplied by the pharmaceutical industries.

For the future development of the state and the country, Ayurveda should be regarded and established as a valuable traditional system. The various herbal formulations prepared and used by traditional *Vaidyas* must be documented systematically so that the patent drama played with regard to turmeric is not repeated. The ongoing acceptance of Ayurveda in the West can be made useful to popularize the Ayurveda across the globe. Recently, a report disclosed the fact that a majority of Americans are now trying to cure their ills with unconventional remedies, including herbal tonics, acupuncture, massage, yoga, and prayer. Also that about one-fifth of Americans use “natural” supplements such as herbs and enzymes for maintaining health (Stein 2004). It would seem that the Vedic connection of Ayurveda can make it a highly saleable concept. High-profile, marketable herbal medical formulations can be developed if measures are taken to organize all the traditional *Vaidyas*. Earlier, the reputation of the individual *Vaidya* and that of the formulations developed by him were criteria sufficient for

people to believe in the medicine's value. Today, the absence of these recognized *Vaidyas* has led to a major gap in the exercise. The claimed properties of the medicinal plants mentioned by various traditional *Vaidyas* should be clinically evaluated in order to strengthen their validity and also to prepare new medical formulations.

In developed countries like United States a majority of people (55%) combine alternative treatments with conventional medicine. It is important to note that 13% try them because they think conventional medicine is too expensive (Stein 2004). The Ayurvedic medicines and the herbal products are cheaper and more available to the poor. In developing countries, where the majority of people cannot afford the high cost of modern medicines, traditional herbal therapy is the only and most vital option. This aspect of traditional herbal healings can be made a highly saleable concept in both developed and developing countries.

In the Uttarakhand State of India, the positive aspect in the traditional therapies and the medicinal plant sector is the ongoing efforts made by government and non-government organizations to promote medicinal plant-based industries and to develop Uttarakhand as the "Herbal State." The present documentation of the medicinal plants of Uttarakhand and the various ailments that can be treated by these plant species would be helpful for further research on exploring their medical efficacy, value addition, and use in curing for various old and new diseases.

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