Indigenous traditional knowledge recorded on some medicinal plants in Narendra Nagar Block (Tehri Garhwal), Uttarakhand

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Garhwal Himalaya has been the reservoir of enormous natural resources including vegetational wealth. Local natives and tribes who live in the vicinity of forest, being close to the nature, possess a deep practical knowledge on indigenous flora, pertaining to curatives, culture, customs, ethos, cults, religion, belief, legends, myths as well as other miscellaneous uses. The people in remote villages and tribal areas depend upon the folk medicines and household remedies to a great extent. The prevalent practice of herbal remedies has descended down from generation to generation and includes the cure from simple ailments to the most complicated one. The present communication pertains to the traditional knowledge on some medicinal plants used for the treatment of various diseases i.e. dysentery, dysmenorrhea, obstetrical problem, piles, leucorrhoea, nasal bleeding, ophthalmic disorder, alopecia, scabies, urinary disorder, bronchitis, lumbago, epilepsy, sleeplessness, splenomegaly, galactagogue, etc.

Keywords: Medicinal plants, Narendra Nagar block, Natural resources, Traditional Health Care System, Traditional knowledge, Vaidyas.

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Introduction

Plants have been used in traditional medicine for thousands of years ago. The knowledge of medicinal plants has been accumulated in the course of many centuries based on different medicinal systems such as Ayurveda, Unani and Siddha. In India, it is reported that traditional healers use 2500 plant species and 100 species of plants serve as regular sources of medicine.

During last few decades there has been an increasing in the study of medicinal plants and their traditional uses in different parts of the world. Herbal remedies are considered the oldest forms of health care known to mankind on this earth. Prior to the development of modern medicine, the traditional systems of medicine that have evolved over the centuries within various communities, are still maintained as a great traditional knowledge base in herbal medicines. Traditionally, this treasure of knowledge has been passed on orally from generation to generation without any written document and is still retained by various indigenous groups around the world.

Documenting the indigenous knowledge through ethno-botanical studies is important for the conservation and utilization of biological resources. Ethno-botanical survey has been found to be one of the reliable approaches to drug discovery. Several active compounds have been discovered from plants on the basis of ethno-botanical information and used directly as patented drugs. As an indigenous cultures are closely maintained by the tribal and other forest dwellers throughout the world, the ethno-botanical investigation is a prerequisite for any developmental planning concerned with the welfare of tribal and their environment. It is an urgent necessity to record all the possible information about the plants and the role of peoples in conserving them. The main focus of the present study is to ascertain the detailed information on the use of plants and their therapeutic practices among peoples of study area.

Uttarakhand Himalaya is the most spectacular in its natural assets, landform, water sedges, lush green forest and floristic diversity. Uttarakhand state comprises 13 districts and lies in between 28° 43’ to 31° 8’ N latitude and 77° 35’ to 81° 2’ E longitude. It is surrounded to the North-west by Himachal Pradesh, to the north by Tibet (China), to the east by Nepal and...
to the south by Uttar Pradesh. The large human populace with diverse life styles, beliefs, traditions and cultural heritage inhabiting in hilly region of Himalayas has learnt to utilize natural resources and products in various ways. Tehri Garhwal is one of the hilly district of Uttarakhand state, India. It has nine blocks. Out of these one of the block in the district Tehri Garhwal is Narendra Nagar which sustains unique and diverse vegetation in wide range of habitats from Tarai- Bhabar tracts (275-1900m asl) to the high range of lesser Himalaya. It lies in between 30° 10'-30° 17' N latitude and 78° 18'-78° 30'E longitude and covering in the area of 6, 8123 ha. It stretches from Dhalwala to Than, Amsera, Jaikot, Gaja to Marora, Nigyer and Dhalwala to Kauriyala, etc. Nomadic tribes are Gujjars and Bhotiyas, the former dwelling in the sub-montane zones during winters and moving towards high altitude during the summer seasons. Bhotiyas less often visit to the block.

Traditional Health Care System (THCS) is the only accessible form for majority of the population, both logistically and economically. Medicinal herbs are the main ingredients of local medicine and are thus of vital importance in Traditional Health Care System. Traditional Health Care System as practiced in the region consists of two system, viz. Folk stream and Classical stream. The folk stream system is based on oral tradition, practiced by local villagers and tribal communities (Non Codified System-NCS). The classical stream is based on theoretical knowledge, experimental and philosophical explanation provided by many learned physicians and surgeons of earlier time like Charak, Sushruta, Galen and Rhazes, etc. (Codified System–CS).

Ethno-medicinal plants have offered immense scope and opportunities for the development of new drugs. Some modern drugs have been deduced from folklore and traditional medicine. Several ethno-botanist have been work out the traditional uses of plants in the Uttarakhand Himalaya. The study on ethno-medicinal plants used to cure different diseases by the peoples has not been adequately worked out by earlier workers in a particular area. Therefore, the present communication deals with attempt to gather information on some traditional uses of medicinal plants from different villages of the Narendra Nagar block to document the medicinal uses of plants to cure the common diseases.

Materials and Methods
Field surveys have been made during 2008-2010 to gather data on traditional uses of medicinal plants across various villages in the block. The information was gathered using semi-structured questionnaires about the types of ailments treated by the traditional use of medicinal plants and the preparation of herbal medical formulations. This information was also gathered from 60 traditional Vaidyas living in different villages of Narendra Nagar block, Tehri Garhwal. For interviews, the Vaidyas were selected randomly from a list of 200 traditional Vaidyas who were identified during community workshops. These Vaidyas resided across various villages of Narendra Nagar block such as Than, Amsera, Khari, Jajal, Jaikot, Ghar-gaon, Kathur (Gaja), Marora, Nigyer, Dhalwala, Shivpuri, Byasi, Bachelikhal, Chaka, Pokhari, etc. Five workshops were organized in different villages of Narendra Nagar block in various groups of indigenous people including Vaidyas were invited to participate through helping document their indigenous knowledge on medicinal plants. However, the information was also gathered in order to understand the attitude of the younger generation towards learning Ayurveda and also to identify the causes of decline in the tradition. The data were cross checked by interviewing more than three Vaidyas on the uses of specific plant species and preparation of herbal formulations. A participant observation method was employed to understand the methods and techniques adopted by Vaidyas in preparation of various herbal formulations. In order to verify the identity of local names of medicinal plant species field visits were undertaken with Vaidyas.

Standard method of collection, preservation and maintenance of specimens in the herbarium were followed. All the collected plant specimens (Plate 1) were identified with the help of recent and relevant floras and confirmed from the authentic specimens, housed in the Herbaria of Botanical Survey of India, Northern Circle (BSD), Dehra Dun, Forest Research Institute (DD), Dehra Dun and Garhwal University Herbarium (GUH), Srinagar Garhwal. All the collected plant specimens have been deposited in the Herbarium of H.N.B. Garhwal Central University, SRT Campus Botany Department Badshahi Thaul, Tehri Garhwal and Botany Department Herbarium (GUH), Srinagar Garhwal. The plant species were arranged alphabetically with their botanical names with citations, family in brackets, local names, voucher specimen no. (SRTH), part used, diseases and mode of applications (Table 1).

Results and Discussion
Although our ancient sages through hit and trial method developed herbal medicines, the reported uses
of plant species do not certify efficacy\textsuperscript{17}. The present preliminary report on ethno-medicinal uses of some plant species need to pharmacologically screened, chemically analyzed and tested for bioactive activities\textsuperscript{18}. Pharmacological screening of plant extracts provides insight to both their therapeutic and toxic properties and helps in eliminating the medicinal plants or practices that may be harmful. The study provides information on 25 plants species belonging to 24 genera and 21 families (Table 1). Out of these plant species, 7 species are herbs, 7 are trees, 5 are under shrubs, 4 are shrubs and 2 are climbers. The plant parts used for medical preparation were bark, flowers, rhizomes, root, leaves, seeds, gum and whole plant. In some cases the whole plant including roots were utilized. The most frequently utilized plant parts were leaves, followed by root, flower, bark, seeds and whole plant.

Some information recorded in the study particularly for \textit{Swertia chirayita}, \textit{Calotropis procera} and \textit{Solanum nigrum} were found to be either not known or little known. The study area is rich in medicinal plant resources. An attempt was made to collect information on the traditional medicinal

Plate 1—Some of the medicinal plants used in Narendra Nagar Block (Tehri Garhwal)
Table 1—Important ethno-medicinal plants of Narendra Nagar block

<table>
<thead>
<tr>
<th>Botanical Name/Family</th>
<th>Local name</th>
<th>Voucher specimen no.</th>
<th>Part used</th>
<th>Disease/Mode of administration</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acacia catechu</em> (Linn.f.) Willd. (Mimosaceae)</td>
<td>Khair</td>
<td>AS-SRTH -03</td>
<td>Bark, pod and gum</td>
<td>Equal quantities of bark, pod and gum are grinded and one teaspoonful of this powder is given thrice a day with water in lumbago. It gives relief from pain in the waist.</td>
</tr>
</tbody>
</table>
| *Achyranthes aspera* Linn. (Amaranthaceae) | Lichkuri | AS-SRTH -01 | Leaves | a) In dysmenorrhoea 3 ml of fresh leaves extract is given orally twice a day for 7 days. This therapy is started on first day of beginning of menstrual cycle and repeated for 5-7 consecutive cycle. 
b) In leucorrhoea 3 ml of fresh leaves extract mixed with curd is given orally before sunrise for 21 days. |
| *Adhatoda vasica* Nees (Acanthaceae) | Baisingu | AS-SRTH -02 | Leaves | Decoction of leaves (20-30 g) mixed with 1g powder of *Piper nigrum* Linn. is given to cure severe bronchitis, bronchial asthma and tuberculosis. |
| *Argemone mexicana* Linn. (Papaveraceae) | Pili kateli | AS-SRTH -12 | Seed and rhizome | Pounded seeds (2 g) of *A. mexicana* along with rhizome of *Curcuma aromatica* Salisb. (1g) and *Acorus calamus* Linn. (2g) made into paste are applied on all kinds of skin diseases twice a day till recovery. |
| *Artemisia nilagirica* (C.B Clarke) Pamp. (Asteraceae) | Kunja | AS-SRTH -13 | Leaves | The leaves are crushed and 2-3 drops of the extract are dropped in the nostrils to stop nasal bleeding and it also cures the sinus problem. 
a) Decoction of 50-100ml plant root is given to the patient of sleeplessness. 
b) Root paste mixed with ghee is applied as eyeliner. It cures redness of eyes. |
| *Boerhaavia diffusa* Linn. (Nyctaginaceae) | Punarva | AS-SRTH -14 | Root | 300g of fresh flower extract mixed with 300 g of *Piper nigrum* powder and make its tablets. In epilepsy these tablets are given 3-4 times a day till recovery. |
| *Calotropis procera* (Ait.) W. T. Aiton (Asclepiadaceae) | Aak | AS-SRTH -75 | Flower | One teaspoonful of leaves extract is administrated orally against jaundice thrice a day after meals. |
| *Cassia fistula* Linn. (Caesalpinaceae) | Simaru | AS-SRTH -46 | Leaves | Small pieces of heart wood (100-200 g) of mature tree is dipped over night in 100-200 ml of hot water, the resulting extract is given orally for about 30 days to the patient suffering from piles. |
| *Cedrus deodara* (Roxb.ex D. Don) (Pinaceae) | Devdar | AS-SRTH -49 | Wood | 40-60g of plant decoction is given to the pregnant women. It helps in easily eliminating the placenta. 

40-60g of plant decoction is given to the pregnant women. It helps in easily eliminating the placenta. | |
| *Cuscuta reflexa* Roxb. (Cuscutaceae) | Amerbel | AS-SRTH -60 | Whole plant | The powder of dry fruits, branches and leaves cures bronchial asthma. |
| *Datura Stramonium* Linn. (Solanaceae) | Datura | AS-SRTH -61 | Fruit, branches and leaves | 15 g of leaves extract mixed with 5-7 pieces of *Piper nigrum* is given to the patient as an antidote of snake bite. It nullifies the venom immediately. |
| *Euphorbia hirta* Linn. (Euphorbiaceae) | Duthi | AS-SRTH -62 | Leaves and flower | Whole plant is crushed and given orally to infants suffering from diarrhoea. |
| *Gnaphalium affine* D. Don (Asteraceae) | Bagla | AS-SRTH -15 | Whole plant | Fresh leaves are boiled in water to prepare decoction which is further concentrated at low temperatures. The concentrated paste is applied to cure joint pains. |
| *Grewia optiva* J.R. Drumm. ex Burret (Tiliaceae) | Bhimal | AS-SRTH -10 | Leaves | 40-60g of plant decoction is given to the pregnant women. It helps in easily eliminating the placenta. |

(Contd.)
knowledge present with the local peoples. However, more in depth information may be explored from the peoples residing in the remote villages of the block. This type of study will give new impetus to the traditional system of healthcare. In view of the importance of traditional medicine which provides health services to 75-80% of the world population, demand of herbal drugs by the pharmaceutical and depleting natural plant resources is increasing. It is high time to document the medicinal utility of less known plants available in remote areas of the country.

**Conclusion**

Today, though the modern civilization is at high pedestals in the field of medicine and treatment of various ailments, these facilities have not reached to aborigines or the people who live far away from the towns, thus these societies still completely depends on the traditional methods of treatment. It has been observed that in some cases modern sciences is not able to treat some of the chronic ailments and still depend on traditional medicinal therapy as an alternative therapy. The present investigation reveals that most of the Vaidyas who retained this traditional knowledge have crossed more than 70-75 years of age, therefore, if documentation of their knowledge will not be done urgently a day will come when this science will be lost irretrievably with the passing away of such people. Thus, it is expected that this investigation will be helpful to conserve the heritable knowledge in the field of herbal treatment and general uses of plants in village ecosystem.

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