

Ethno botanical use, Conservation, and Livelihood of important Medicinal plants grown In the Gulmarg Himalaya Region of Jammu and Kashmir (India)

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Abstract

Medicinal plants form a diverse group of flowering plants comprising approximately 8000 species and these accounts for around 50 percent of all the higher flowering plants of India. A large number of people use different medicinal plants for the treatment of various human and livestock ailments in India. Over one and half million practitioners of the Indian system of medicine in the oral and codified streams use medicinal plants in preventive, promotive and curative applications. This demand had shown a quantum jump in recent years in the supply of plant materials used and treaded across India. Medicinal plants have thus become major sectors of trade and commerce and are significantly contributing to the socio-economic developments of certain developed and developing countries like India. Among various states of India, Jammu and Kashmir harbour great rich biodiversity of economically important medicinal plants because it provides a diverse type of habitats for their growth. The Kashmir Himalayas supports a rich and spectacular biodiversity of great curiosity and promising economic benefits owing to its topographic variations. Keeping in view the significance of the subject, the present study was carried out to document the various aspects of ethno medicinally important plants of Gulmarg Himalayas (Jammu and Kashmir). The present study focuses on ethno medicinal use, conservation, and livelihood of the economically important medicinal plants of Gulmarg hills. It also aims at various essential medicinal products extracting from these medicinal plants from this region. In this study, a large area was studied in Gulmarg hills by questioning local Gujar and bakarwall people (nomad people) about the beneficial use of locally medicinal plants available there and the economic value of these medicinal plants.

In recent years, medicinal plants are gaining tremendous importance throughout the world. They are being continuously used for the treatment of various human and animal diseases in one or other form. With the ongoing progressions in plant sciences, there has been

a huge increment in the utilization of plant-based products for the treatment of various human ailments because they have minimal side effects. According to the World Health Organization, the present demand for plant-based medicines is about the US \$ 14 billion every year. In India, a large number of people use different medicinal plants for the treatment of various human and livestock ailments. Over one and half million practitioners of the Indian system of medicine in the oral and codified streams use medicinal plants in preventive, promotive and curative applications. This demand had shown a quantum jump in recent years in the supply of plant materials used and treaded across India. Medicinal plants have thus become major sectors of trade and commerce and are significantly contributing to the socio-economic developments of certain developed and developing countries like India. Kashmir Himalaya harbours a number of different important and economical medicinal plants of the region. Keeping in view the centrality of the subject, the present study was carried out to document the ethno medicinally important plants in the Gulmarg valley of Kashmir Himalaya and the livelihood and conservation of these medicinal plants.

Study area:

The present study was carried out in Gulmarg (meadow of flowers) valley which is geographically located at 34.05°N 74.38°E. Physiographically, Gulmarg lies in a cup-shaped valley in the Pir Panjal Range of the Himalayas, at an altitude of 2,650 m (8,694 ft), 56 km from Srinagar. The soil in Gulmarg comprises glacial deposits, lacustrine deposits and moraines of Pleistocene age covering shale's, limestone, etc. Gulmarg valley in Kashmir Himalaya is

marked by various natural meadows that harbour different kinds of economical essential medicinal plants of the Kashmir Himalaya. The green meadows of Gulmarg are surrounded by forests of green pine and fir. Khilanmarg and Aparwart are important peaks in Gulmarg. Due to its distinct geographic location, the area is inhabited by different ethnic groups such as Gujjars, Bakerwals and other nomadic people. These groups have their own knowledge of traditional herbal medicine inherited from their forefathers. These medicines are well accepted by the local people since generations have experienced their efficacy in alleviating a variety of diseases.

The method employed during our study was to collect the fruitful information about the local available medicinal plants of the region. The field trips were conducted to the area in the month of June and October in 2018-2019. Many elderly people of the area were consulted. They provide us with ethnic knowledge regarding the available medicinal plants of the region. The local name and traditional uses of plants, with emphasis on medicinal uses, were documented by interviewing the local elderly knowledgeable persons including local hakims. Many local people of Gulmarg hills were questioned using a structured, close-ended questionnaire (Appendix 1).

During the present survey 15 species of plants belonging to 12 families (as shown in table-1) has been recorded those are used by the tribal and non-tribal people against different diseases. The recorded plant species were enumerated alphabetically in table 1, along with

Table-1. A brief description of some of the medicinal plants of Gulmarg hills is given

S. No.	Taxonname	Local Name	Family	Partused	Ethnomedicinal uses
1	<i>Arnebia benthamii</i> Wall ex G. Don	Kahzaban	Boraginaceae	Rhizome	Common cold, cough, fever, blood purifier.
2	<i>Abies pindrw</i> (Royle ex D. Don) Royle	Sal	Pinaceae	Bark	Rheumatism
3	<i>Atropa</i> L.	Chella lubbar	Solanaceae	Roots and Leaves	Cough and antispasmodic
4	<i>Berginia ligulata</i> Wall.	Zakhmi hayat	Saxifragaceae	Roots and Leaves	Intestine complaints and stomach ulcers
5	<i>Cannabis sativa</i> L.	Bhang	Cannabin-naceae	Leaves, and stem	Ear-ache, blood purifier, Scabies and piles
6	<i>Cedrus deodara</i> (Roxb. ex Lamb.) G. Don	Dividar	Pinaceae	Stem and latex	Skin rashes and external ulcers
7	<i>Euphorbia wallichii</i> Hook. f.	Guri-dud	Euphorbiaceae	Flower	General weakness after childbirth
8	<i>Lavatera cashmeriana</i> Cambess	Sozposh	Malvaceae	Seeds	Obesity, Diabetes, Liver infection
9	<i>Oxalis corniculata</i> L.	Tsok-tsen	Malvaceae	Leaves	Toothache, convulsions, blood purifications, diarrhoea
10	<i>Podophylum hexandrum</i> Royle	Banwangun	Berberidaceae	Seeds and gums	Skin diseases, gastric problems
11	<i>Pinus roxburghii</i> Sarg.	Chad	Pinaceae	Flower	Skin diseases and asthma
12	<i>Prunella vulgaris</i> L.	Kalwauth	Lamiaceae	Rhizome	Mumps, skin irritation in pregnant women
13	<i>Saussurea costus</i> (Falc.) Lipsch.	Kuth	Asteraceae	Rhizome	Joint pain, fever, back pain
14	<i>Trillium govanianum</i> Wall. ex Don	Tripiter	Melanthiaceae	Rhizome	Stomach problems
15	<i>Urtica dioica</i> L.	Soi	Urticaceae	Leaves	Rheumatism, minor wounds

their botanical and vernacular names, families, parts used and ethno medicinal aspects. Among the recorded species, 12 species are herbs, and 03 species are trees. Different plant parts are used against different ailments but dominantly rhizomes, leaves and roots are used either in raw form or as aqueous extracts. The categorization of some medicinal plants of

Gulmarg hills into different groups like selling price of these medicinal plants from local people to middlemen, commercial and household use, trade value and essential products obtained from medicinal plants of Gulmarg hills is also given in table 2. It has been found that the local people (Gujars, nomads, shepherds) of Gulmarg were collecting various

medicinal plants in different places mostly at higher regions of Gulmarg like Afarwath peak, etc and by their own selling them to different nearby people who know the importance of these medicinal plants. It has also been found that during winters as Gulmarg hills are covered with the full of snow from November to mid April but with the onset of summers the different ethnic groups of people like nomads, gujars and shepherds go into the higher reaches of Gulmarg hills for finding abundant grasslands so that their livestock's like sheep, buffaloes, cows get abundant grasses for grazing their animals in these upper grasslands of Gulmarg. On one hand these ethnic people while grazing their animals at higher reaches of Gulmarg also collecting a number of beneficial medicinal plants like *Podophyllum hexandrum*, *Bergenia ligulata*, *Trillium govanium* etc and using themselves for the treatment of various ailments and also selling them at very cheap rates to the other adjoining villagers, directly or mostly to the middle man because they purchased in large quantities these medicinal plants and selling themselves at very high rates to the people of other regions of valley. The floral and vegetation studies of Kashmir Himalaya have been carried out since the first half of the twentieth century (Kaul *et al.*,¹¹; Dar Farooq *et al.*⁴). Some other studies like Dar *et al.*,⁷; Dar *et al.*,²; Dar *et al.*,³; Dar *et al.*,⁶; Ara *et al.*,¹; Dar Naqshi *et al.*⁵, etc. have highlighted the various aspects of ethno-medicinal plants of Kashmir valley, but here it is pertinent to mention that no effective study has been carried out to date to document the ethno medicinally important plant species in the target area. Hence, our study is of great significance as it provides a lead in

documenting the knowledge of traditional herbal medicine inherited from our forefathers. It has been found that the local people of the region sell different medicinal plants and their parts to gain some income from the available medicinal plants of the region. This observation is the outcome of extensive survey and exploration of medicinal plants of Gulmarg hills. It is now becoming essential to conserve the medicinal plants of Gulmarg hills in large scale so that the livelihood of the local people of the region remains alive. Similar other studies like Dhar, U. *et al.*,⁹; Husain *et al.*,¹⁰; Dar *et al.*,⁸; Dar, Naqish *et al.* 2002, etc have also stressed that there is an urgent of documentation and conservation of these plants of Gulmarg hills.

The present study suggests that the traditional system of primary healthcare utilizes the plant resources as medicines in the studied area (Gulmarg Valley), India. The traditional knowledge system is known to few identified persons in the community and this knowledge generally inherited through the oral transfer in family lineages as there is no written document. Hence, our study is of great significance as it provides a lead in documenting the knowledge of traditional herbal medicine of Gulmarg hills. For the sustainable growth and development of medicinal plants of Gulmarg hills, there is a need to develop the coordinated strategies, policies and efforts at each level like research of these medicinal plants, their cultivation, conservation and marketing. This study revealed that a majority of people in Gulmarg were using medicinal plants continuously and there is an urgent need to conserve and preserve these plants for future generations.

Table-2. Categorization of some plants into different groups are given

Species name	The rate in Rupees/KG	Commercial Use	Household Use	Both	Trade value or market value	Nature of trade or agency	Production
<i>P. hexandrum</i>	400 to 500	-	+	-	Lowest 1600kg	Illegal / middleman	Podophyllo toxin/ Etoposide
<i>A. acuminata</i>	500 to 600	-	+	-	Lowest 1800kg	Illegal / middleman	Crude drug/ tropane Alkaloids
<i>T. govanianim</i>	700 to 800	+	+	+	Low 2000kg	Illegal / middleman	Trillarin and diosgenin
<i>A. benthamii</i>	450 to 550	+	+	+	Lowest 2000kg	Illegal / middleman	Gaozaban drug
<i>S. costus</i>	650 to 500	-	+	-	Low 1200kg	Illegal / middleman	Essential oils
<i>B. ligulata</i>	700 to 800	+	+	+	Low 1900kg	Illegal / middleman	Bergnin chemical

Appendix 1 :

Questionnaires used in interviews about medicinal plants in Gulmarg hills, Kashmir.

- Do you know the medicinal plants which found in your locality –If Yes please give the name ?
- What is the use of these medicinal plants?
- Which parts of these plants are used for medicinal purposes ?
- In which season do you collect these plants ?
- Why do you collect these medicinal plants (1. domestic consumption 2. domestic consumption and trade and 3. Purely trade).
- At what price you are selling medicinal plants to a middle man (per kg).
- If trade what is the market price of these medicinal plants.
- Is this plant found near your house (kothas)- If yes please give the location of its occurrence ?
- How you can use these plants (a- as spice b- medicine c- other).
- Can you classified this plant according to its nature –If yes please give the details of classification ?
- Do you extract this plant- If yes then what is the purpose of extraction (a- domestic b- contractor c-cooperatives).
- How much quantity is extracted by you in every season (a >25 kg B- 10-25 kg c- >10 kg)

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