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Ethnomedicinal plants of Shankaracharya Hill, Srinagar, J&K, India

Kewal Kumar [a], Yash Pal Sharma [b], R.K. Manhas [c,*], Harpreet Bhatia [b]

[a] Department of Botany, Government Degree College for Women, Udhampur 182101, J&K, India
[b] Department of Botany, University of Jammu, Jammu 180001, J&K, India
[c] Department of Botany, Government Degree College, Kathua 184104, J&K, India

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ABSTRACT

Ethnopharmacological relevance: Primitive human societies have always relied on plants and plant products for various remedies. In certain areas, these folk medical prescriptions are endemic and have survived through ages from one generation to the next through word of mouth. They do not exist as written knowledge. The present study was undertaken with an objective of documenting the ethnobotanical information of medicinal plants of Shankaracharya Hill by taking the help of local herbalists, elderly and knowledgeable people.

Material and methods: The data was quantitatively analysed using use-value (UV), informant consensus factor (ICF) and fidelity level (Fl%) indices.

Results: Total 130 plant species from 57 families and 111 genera were ethno-medicinally utilized by the 103 informants interviewed in the present study. The most used families were Asteraceae, Rosaceae, Lamiaceae, Fabaceae and Brassicaceae. The medicinal plants were mainly herbs (79.2%). Leaves were the most used (27.6%) plant part followed by whole plant (14.8%), root (11.4%) and seed (10.5%). The most important species on the basis of UV were *Viola odorata*, *Taraxacum campylodes*, *Aesculus hippocastanum*, *Artemisia absinthium*, *Daucus carota*, *Thymus serphyllum*, *Ephedra gerardiana* and *Salvia moorcroftiana*. The values ICF ranged between 0.93 and 0.76. Only *Epilobium hirsutum* recorded 100% Fl. Some of the most important medicinal plants with high Fl values were *Tribulus terrestris*, *Asparagus officinalis*, *Trifolium repens*, *Anemone biflora*, *Melia azedarach*, *A. absinthium*, *Lonicera quinquelocularis*, *Rosa webbiana*, *D. carota*, *Oxalis corniculata* and *Potentilla reptans*.

Conclusion: The contribution of plant parts collected through destructive methods was 29.5%. Harvesting of roots, rhizomes, bulbs and corm kills the parent plant and could be a severe threat for survival of the often rare and slowly reproducing medicinal plants, and therefore need sustainable utilization and conservation strategies. Ethnomedicinal species like *A. absinthium*, *A. hippocastanum*, *D. carota*, *M. azedarach*, *T. campylodes*, *T. serphyllum*, *T. terrestris* having high number of citations, UV and FL should be analyzed for phytochemicals and pharmacology.

1. Introduction

Primitive human societies have always relied on plants and plant products for various remedies. In certain areas, these folk medical prescriptions are endemic and have survived through ages from one generation to the next through word of mouth. They do not exist as written knowledge. Indigenous people developed this knowledge through practical experience and skill to solve the problems that they faced on day to day activity (Sharma et al., 2012; Bhatia et al., 2014).

The Kashmir Valley has a long history of utilization of herbal medicines through the system of *Ayurveda* and *Unani*. The inhabitants of this region are called Kashmiri People who speak Kashmiri Language. The earlier Kashmiris were all 'Brahmins' (descendents of Aryans) (Kachroo and Nahvi, 1994). It was in the late 13th century that Islam spread into the valley and it became a blend of both Hindu and Islamic culture. After that, *Unani* system of medicine emerged under the patronage of Mughals during 16th–18th century and gained popularity as an effective system of medicine (Hussain, 1996). Therefore, the Kashmiri people have been living in close association with plants since time immemorial. They attribute some medicinal property to almost every plant species. Plants are intricately woven with their social, cultural and religious customs and also satisfy their bio-aesthetic and ethical needs. The Kashmiri people are still using plants for curing most of their ailments, the knowledge of which is confined to them.

Kashmir Himalaya, one of the biotic provinces of the Himalayas, and a part of biodiversity hotspot, supports a rich and unique floristic

* Corresponding author.
E-mail address: manhasrk@rediffmail.com (R.K. Manhas).

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Table 1
Demographic description of the informants and Spearman correlation analysis.

	Female	Male
Number of informants	28 (27.2%)	75 (72.8%)
0.5		
Age group		
20–29	5 (17.9%)	8 (10.7%)
30–39	5 (17.9%)	15 (20.0%)
40–49	5 (17.9%)	11 (14.7%)
50–59	3 (10.7%)	13 (17.3%)
60–69	2 (7.1%)	13 (17.3%)
70–79	6 (21.4%)	10 (13.3%)
80–89	2 (7.1%)	5 (6.7%)
0.5		
Educational qualification		
Never attended school	14 (50.0%)	18 (24.0%)
Attended school for 1–5 classes	5 (17.9%)	22 (29.3%)
Attended school for 6–10 classes	4 (14.3%)	23 (30.7%)
Intermediate (12th class)	3 (10.7%)	6 (8.0%)
Graduate	2 (7.1%)	6 (8.0%)
0.5		
Spearman's correlation coefficient ($n=103$; $\alpha=0.05$)	***R***	***P***
Age of the informant vs no. of plants	0.473***	<0.001
Age of the informant vs sharing of information about plants	−0.233*	0.018
Education level vs no. of plants	−0.301**	0.002
Education level vs sharing of information about plants	0.304**	0.002

Values given in the table are number (percentage contribution), r – correlation coefficient, P – probability, α –. *** Correlation is significant at the 0.001 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

diversity including a rich repository of medicinal plants and the traditional knowledge associated with these plants (Dar et al., 2002). The Shankaracharya Hill, a part of Kashmir Himalaya situated in Srinagar, is one of the very few areas left in the city where plants grow freely in their natural habitat. It harbours a rich diversity of medicinal plants and is also one of the last reservoirs of a number of endemic species like *Astragalus leucocephalus* and *Anemone biflora*.

A lot of work has been done to explore the medicinal plants of Kashmir Himalaya from time to time by various workers (Ara and Naqshi, 1992; Kaul, 1997; Kapahi et al., 1999; Khan et al., 2004; Wani and Dar, 2006; Tantray et al., 2009; Malik et al., 2011; Bhat et al., 2012; Baig et al., 2013; Jeelani et al., 2013; Lone et al., 2013, 2014; Hassan et al., 2013). But, the ethnomedicinal potential of the Shankaracharya Hill has not yet been explored. So, an attempt has been made with the help of local people including local herbalists, elderly and knowledgeable people to document the ethnobotanical information of medicinal plants of Shankaracharya Hill.

2. Materials and methods

2.1. Study area and ethnographic background of the local people

The Shankaracharya Hill is located between 34°04′35.56″ and 34° 05′25.08″N latitude and 74°50′03.16″ and 74°51′08.63″E longitude, covering an area of approximately 138.35 ha. It represents one of the extension tail tips of the Zabarwan range in Srinagar and lies in south-east of Srinagar at a distance of about 4.5 km from the Clock Tower, Lal Chowk and 17.5 km from Dachigam National Park. Average height of the Hill is nearly 300 m i.e. from 1572 m to 1880 m above mean sea level. It bears a prevailing northerly trend and shows a gradual increase in its height till it merges with the majestic snow-clad Waterway Mountains in the south-east (Dar et al., 2002). It offers mountainous, precipitous and actively eroding slopes and scraps topography, sometimes with differently dissected terrain. It is also punctuated by numerous spurs, ravines and cliffs all along its area. The Hill has a great religious value and is so named due to the presence of a temple called Shankaracharya Temple at its top. The temple is thought to be the oldest shrine in Kashmir and an attraction for tourists all over the world.

2.2. Data collection

Ethnobotanical information on medicinal plants of Shankaracharya Hill was collected from informants living around the hill and visitors during April, 2009 to September, 2014. Total 103 informants were interviewed (75 males and 28 females). All the informants were Muslims. They have religious reservations on the conversation of females with the males of other religions. These religious bindings also assure their (females) restricted visits to the Shankaracharya Hill. All the female informants were interviewed by taking the help of a female colleague. The information was collected through questionnaires and interviews focussing mainly

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