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## Diversity with ethnomedicinal notes on Orchids: A case study of Nagdev forest range, Pauri Garhwal, Uttarakhand, India

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### Abstract

Pauri one of the hilly stations of Garhwal Himalaya, repository of unique and rich vegetation in wide range of habitats and harbors the treasure of medicinal plants. In the present investigation an attempt has been made to document the diversity and medicinal importance of terrestrial Orchids in temperate forest of Pauri Garhwal, Uttarakhand. Total 4 genera and 7 species of orchids were reported with medicinal value. Due to habitat specificity, over grazing and illegal collection of Orchids they are under stress of extinction. Hence it is the need of the hour to carry out such investigation which would help full in future for planning the conservation of orchids of this region.

**Keywords:** Orchids, Astavarga Nagdev, Pauri (Garhwal)

### 1. Introduction

Orchids are one of the most important and highly evolved family of beautiful medicinal plants belonging to Orchidaceae, occupying a wide range of habitat with inconceivable structure and colour of their flowers which develop for their adaptation to pollination by insects, making them mysterious in many ways and attracted the people since time immemorial to use these plants in a number of traditional systems of medicine and for ornamental purposes. In India use of orchid was documented even in vedic period; "Astavarga," a group of eight different plants were used to prepare different tonics including 'Chyawanprash' and rejuvenation agents which use four orchids i.e., *Malaxis acuminata* D. Don (Jeevak), *Malaxis muscifera* (Lindl.) Kuntze (Rishbhake), *Habenaria edgeworthii* Hook. f. ex Collett (Virddhi) & *Habenaria intermedia* D. Don (Riddhi). In Ayurveda system of medicine, Orchids were used to treat different ailments like nervous disorders (*Cymbidium elegans*, *Cypripedium pubescens*), tuberculosis (*Coelogyne henryi*, *Malaxis acuminata*) and dermal (*Dendrobium monticola*) related disease etc (Kant *et al.*, 2012) [1] in the form of indigenous knowledge. This Indigenous knowledge of medicinal plant passing from generation to generation in villages as an one of the important heritage but knows with onset of modernization, this knowledge is restricted to some aged persons vaidyas in the village only (Bisht *et al.*, 2014) [2]. So documentation of such valuable knowledge has become very important.

The orchidaceae family accommodates 25000 species of 800 genera distributed all over the world and in India 1141 species of 166 genera were reported (Chaug *et al.*, 2009) [15]. In Uttarakhand the altitudinal and climatic variation from lower shivalik to alpines support the growth of 72 genera and 236 species of orchids of which 17 are medicinally important (Joshi *et al.*, 2009) [9]. Orchids are generally perennial herbs; may be land plant, lithophytes, epiphytes, and saprophytes and contribute nearly 10% of the total flowering plant (Gupta *et al.*, 2016) [6].

### 2. Material and Method

The area of present study is located at latitude 30° 8'59" N and longitude 78° 49' 4" E in the central part of Garhwal Hills, Pauri Garhwal at an elevation of 1750 meter from A.M.S.L. Regular field visits were done during 2015-2016. Collected plants were identified by using local flora and with the help of vernacular names and available literature.

### 3. Result and Discussion

Terrestrial orchids usually grow on moist and shady habits and generally appear during rainy season having both ornamental and medicinal properties. Out of the 17 medicinal orchids from Uttarakhand, 07 medicinal orchids were reported from the temperate forest of Pauri (forest range Nagdev) hills.

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Table 1

S. No	Botanical name	Common name	Habitat	Habit	Part used
1	<i>Goodyera repens</i> (L.) R.Br.,	Girwara	Terrestrial	Herb	Whole plant
2	<i>Habenaria edgeworthii</i> Hook. f. ex Collett.	Virddhi	Terrestrial	Herb	Tuber and Leaves
3	<i>Habenaria intermedia</i> D. Don.	Riddhi	Terrestrial	Herb	Tuber and Leaves
4	<i>Herminium lanceum</i> (Thunb. ex Swartz) Vuijk	Jalya	Terrestrial	Herb	Tuber
5	<i>Malaxis acuminata</i> D. Don.,	Jeevak	Terrestrial	Herb	Pseudo bulb
6	<i>Malaxis muscifera</i> (Lindl.) Kuntze.	Rishbhake	Terrestrial	Herb	Bulb
7	<i>Satyrium nepalense</i> D. Don	Salang-mishri	Terrestrial	Herb	Tuber

***Goodyera repens* (L.) R. Br.****Ayurvedic names:** Girwara**Botany and Use:** A small terrestrial creeping herb, 10-20cm high, with tuberous rhizome commonly found in shady oak forest. Leaves all radical, in lax rosette, ovate 2-3.5 cm, acute with conspicuous pale-netted veins; base narrowed into 1 cm long petiole, sheathing at base. Flower white, tinged pink or brown.

Leaf and tuber are used to cure different ailments viz., toothache, wound, loss of appetite, urinary infection, irregular menstruation, insect bite and blood purification, general decoction of whole herb or root and leaf is given.

**Flowering time:** August- October**Parts used:** Whole plant***Habenaria edgeworthii* Hook. f. ex Collett,****Ayurvedic names:** Virddhi.**Distribution:** Origin Regional Himalaya, 1500-3000m.**Botany and Use:** A stout, erect, glabrous terrestrial herb with tuber. Stem 30 to 60 cm. high. Leaves alternate, ovate or oblong-lanceolate, 6-10 cm long. Flower yellow.

Cooling and spermopiotic, used in blood and skin diseases, cough, asthma, leprosy, gout, general debility and as a brain tonic.

**Ayurvedic formulation:** Astavarga churna, Chyawanprash rasayan, Mahamayura ghrita (Balkrishan *et al.*, 2012) [1].**Parts used:** Leaves and tuber.**Flowering time:** July-August.**Substitute:** *Dactylorhiza hatagirea* D. Don, and *Sida acuta* Burm. f. (Balkrishan *et al.*, 2012) [1].***Habenaria intermedia* D. Don.,****Ayurvedic names:** Riddhi**Distribution:** Origin Regional Himalaya, 1500-2500m.**Botany and Uses:** A stout, erect, glabrous terrestrial herb with tuber, plant 25-60 cm high, robust leafy. Leaves-Scattered usually 3-5, ovate or oblong or ovate-lanceolate, 5-10 cm long, acuminate, cordate at the base. Flower white or greenish white.

Cooling and spermopiotic, used as blood purifier, skin diseases, cough, asthma, leprosy, gout, muscular pains, sprains and general debility.

**Ayurvedic formulation:** Astavarga churna, Chyawanprash rasayan, Vachadi oil, Vajikaran ghrita (Balkrishan *et al.*, 2012) [1].**Parts used:** Leaves and tuber.**Flowering time-:** July-August.**Substitute:** *Sida cordifolia* L., *Aasparagus filicinus* Buch-Ham. Ex D. Don. (Balkrishan *et al.*, 2012) [1].***Herminium lanceum* (Thunb. ex Swartz) Vuijk.****Ayurvedic names:** Jalya**Distribution:** Origin Regional Himalaya, 1000-2400 m**Botany and Uses:** Glabrous terrestrial herb, 25-75 cm high; root with 1 or 2 ovoid tuber. Leaves few, alternate, sessile,

linear-lanceolate, 10-20 cm, acuminate. Flower small pale green.

Extract of plant given in suppressed urination.

**Flowering time:** July-September**Parts used:** Tuber.***Malaxis acuminata* D. Don,****Ayurvedic names:** Jeevak.**Distribution:** Origin Regional Himalaya, 1400-2000 m.**Botany and Use:** Terrestrial herb, 10-25cm in height, bulbous at base covered by old leafy scales. Leaves usually 2-4, sessile or petiolate, ovate-lanceolate, often light green, acute with prominent veins, leaves in whorls at the nodes directly raised upwards, stem covered by basal leaves forming a tubular structure. Flower pale green tinged purple.

It is used in preparation of "Chyawanprash" used to increase sperm count, paste of bulb applied externally in case of insect bite. Cooling, febrifuge and spermopiotic, used in tuberculosis, internal and external haemorrhage, burning sensation, as a tonic, in fever and ethanolic extract of its pseudo tuber showed analgesic and anti-inflammatory activity.

**Ayurvedic formulation:** Astavarga churna, Chyawanprash rasayan, Mahapadma tail, Chitrakadi taila, Vachadi taila, Brahini gutika and Himvana agada (Balkrishan *et al.*, 2012) [1].**Part used:** Pseudo bulb.**Flowering time-** July-August.**Substitute:** *Pueraria tuberosa* DC, *Tinospora cordifolia* (Willd.) Miers. (Balkrishan *et al.*, 2012) [1].***Malaxis muscifera* (Lindl.) Kuntze****Ayurvedic names:** Rishbhaka.**Distribution:** Origin Regional Himalaya, 1600-3600 m.**Botany and Use:** An erect, glabrous terrestrial herb up to 30-50 cm high. Stem tending to be pseudo- bulbous at base. Leaves usually 2, unequal, sessile, 5-10 cm long and 2-4 cm broad, elliptic-lanceolate or ovate, acute or obtuse, narrow at the base to sheathing petiole. Flower yellow green.

Cooling, febrifuge and spermopiotic, used in internal and external haemorrhage, burning sensation, dysentery, fever and general debility.

**Ayurvedic formulation:** Astavarga churna, Chyawanprash rasayan, Chitrakadi taila, Vajikaran ghrita, Mahamayura ghrita and Himvana agada (Balkrishan *et al.*, 2012) [1].**Part used:** Bulb.**Flowering time-** July-September**Substitute:** *Pueraria tuberosa* DC, *Centaurium roxburghii* (D. Don) Druce. (Balkrishan *et al.*, 2012) [1].***Satyrium nepalense* D. Don.****Ayurvedic names:** Salang-mishri**Distribution:** Origin Indian Oriental, 1400-2400m.**Botany and Uses:** An erect, glabrous terrestrial herb with 2-3 oblong tubers; 30-60 cm high. Leaves are usually 2-3

subradical, ovate-lanceolate, acute, fleshy, base stem sheathing.

Thoroughly washed tuber is edible. Dried tuber used in tonic and also in malaria and dysentery. Methanolic extract having anti-bacterial activity for both, gram +ve and gram -ve bacteria

**Flowering time:** July- October.

**Parts used:** Root (Tuber).



**Plate 1:** *Satyrium nepalense*



**Plate 2:** *Malaxis acuminata*



**Plate 3:** *Malaxis acuminata* (colony)



**Plate 4:** *Habenaria edgeworthii*



**Plate 5:** *Habenaria intermedia*

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