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Traditional Medicinal Uses, Phytochemical Profile and Pharmacological Activities of *Crepidium acuminatum* (D.Don) Szlach

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Abstract

Crepidium acuminatum is one of the nature's most extravagant group of flowering plants i.e. Orchids distributed throughout the world from tropics to high alpine. It is grouped among *Astavarga* plants, *Jivaniya Gana* and *Bramhiniya* in different *Ayurveda* classicals. It is grown primarily at a height of more than 1500fts in India and different parts of the world. It has been used in many parts of the world in traditional healing system as well as in the treatment of a number of diseases since the ancient times. It belongs to the largest family of plant kingdom i.e. Orchidaceae. Yet no studies have been done regarding its medicinal properties and traditional uses. Here a brief research is carried out on its phyto-chemical profile and pharmacology to rule out its medicinal properties. It faces the extreme danger of extinction due to over-exploitation and habitat loss.

Keywords: *Astavarga; Ayurveda; Medicinal Herbs; Jivaniya; Bramhiniya.*

Introduction

Ayurveda is eternal and its tradition is everlasting. It continues to flow from ancient times. The history of *Ayurvedic* literature being associated with *Brahma* and other *devtas* is very ancient, dignified and enormous. Lord *Dhanvantri* described that *Ayurveda* is the science of life. It is a mirror of life (beneficial, non-beneficial, happy and unhappy factors of life). The main purpose of *Ayurveda* is to protect the health of a healthy person and to mitigate the disorders of a patient. The recognition of *Charaka*, *Susuruta* and other *Samhitas*, in their own way, still continues from the ancient times. The principles of health protection described in *Ayurveda*, tools for disease free life, good conduct and noble behavior and other issues described lucidly are important in all their perspectives.

Materials and Methods

Extensive literary research is conducted using different available literature on the drug, such as classical text of *Ayurveda* and other compendium. Data is also collected from various books, magazines, journals, periodicals and papers published in the e-journal etc. The review was conducted with an interactive strategy of combining the keywords *Astavarga*, *Ayurveda, Jivaniya, Bramahniya, Nighantu, Samhita* etc.

Study Area

Considering the availability of the plant, the study is conducted in different areas of Uttarakhand specialy Mussoorie and Dhanolti. Mussoorie, popularly known as the "Queen of Hills" is a charming hill station situated at an altitude of 2003 mts (+6500 FT) above sea-level in the Garhwal hills.

Identification

The plant materials were identified with the help of standard local floras. Preliminary identification was done by examining fresh plant procured by the local villagers. The corresponding raw materials were collected and the morphological characters were compared with the fresh plants and vernacular names.

Geographical Distribution

Around the world it is found in Pakistan, Bhutan and Tibet between 1500-3100 mts elevation. In India found in Central and Eastern Himalaya from

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Uttarakhand to Assam and Sikkim up to an altitude of 3300 mts in alpine grassland, grassy hill sides, damp gullies and stony slopes.

Specific Habitat

Himachal Pradesh- Shimla, Glen fall, Baluganj, Elysium Hill, on the way to Rani forest, on the way from Khajiyar to Chamba, Chail, Hattu peak and Narkanda. *Uttarakhand*-Dehradun-Camelback road, on Mussoorie bypass road, above Barlowgunj in Chakrata, Jaunsar Tehri (Magra); *Pauri*-Pode khal; *Chamoli*-Nagnath, Ukhimath, Gopeshwar; *Pithoragarh*-Sarju Valley, Bernath, Thalkedar; Nainital-Bhawali, Ramgarh; *Almora*-Between Ranikhet and Chaubatiya.

Taxonomic Position

Kingdom:	Plantae
Division:	Tracheophyta
Class:	Liliopsida
Order:	Asparagales
Family:	Orchidaceae
Genus:	*Crepidium*
Species:	***acuminatum***
Botanical Name:	***Crepidium acuminatum***
Author name	**(D.Don) Szlach.**
Synonyms:	*Microstylis wallichii* Lindl.
	Microstylis trigonocardia Schltr.
	Microstylis siamensis Rolfe ex Downie
	Microstylis pierrei var. *rotundata*
	Microstylis pierrei Finet
	Microstylis biloba Lindl.
	Malaxis wallichii (Lindl.) Deb
	Malaxis pierrei (Finet) Tang & F.T.Wang
	Malaxis biloba (Lindl.) Ames
	Malaxis allanii S.Y.Hu & Barretto
	Malaxis acuminata f. *biloba*
	Malaxis acuminata var. *biloba*
	Malaxis acuminata D.Don

Vernacular Name

English: The gradually tapering Malaxis, Acuminate malaxis, Jeevak; *Sanskrit: Jivaka*, *Kurcasirsaka*, *Jiva* , *Hrisvanga*; *Hindi: Jivaka*; *Gujarati*- Jivak; *Kannada*- Jivak; *Malayalam*- Jivakam; *Tamil*- Jivakam; *Telugu*- Jivakamu; *China*- Qian lie zhao lan; *Vietnam*- Mao ai lan nhon.

Taxonomic Features

Stem is underground, spreading, fibrous roots downwards, ribbed. *Leaves*-Usually 2-4, sessile or petiolate, 7.5-12.5 cm long, ovate-lanceolate, often discolored, light green, acute with prominent veins,

Fig. 1: Showing Jivaka (*Crepidium acuminatum* (D. Don) Szlach)

leaves in whorls on the nodes directly raised upwards, angular, attenuate, stem covered by basal leaves forming a tubular structure. *Flowers*-scape-7.5-20 cm long, flower small shortly stalked in terminal raceme, about 10 mm in diameter, yellowish-green with purple centre. Bracts- spreading shorter than the ovary. *Sepals*-oblong, dorsal 1-3 nerved, lateral 3-5 nerved, 2 laterals rather shorter than the dorsal, margins recurved. *Petals*-linear, slender, longer than sepals, margin recurved, lip-5, shield like, slightly convex, tip rounded, notched or bilabiate, adnate to the base, the column sides of the lip produced upwards into large auricles, auricle of the lip very variable, acute or obtuse, straight and slightly overlapping. *Staminal Column*- Very short with short spreading arms. *Anthers*- Sub terminal, pollinia-4. *Fruits*-6 chambered capsule. Seeds- minute, powdery, ovoid, pseudobulbs 3-9 cm long and 1-3 cm in diameter, conical, fleshy, smooth, shining, in pairs, new one look like garlic cloves, greenish-white, covered with membranous sheath, slightly mucilaginous, remain alive over longer period. *Flowering*: July-August. *Fruiting*: September-October.

Phytochemical Profile

Pseudobulbs contains alkaloid, glycoside, flavonoids and â-sitosterol. Also contains piperitone, O-Methy-lbatatasin-1, 8-cineole, citroenellal, eugenol, glucose, rhamnose, coline, limonene, p-cymene and ceryl alcohol.

Pharmacological Activities

a. Pseudo bulb is Sweet, aphrodisiac, haemostatic, antidiarrhoeal, styptic, antidysentric, febrifuge, cooling and tonic. It is useful in sterility, vitiated conditions of *Pitta* and *Vata*, semen related weakness, internal and external hemorrhages, dysentery, fever, emaciation, burning sensation and general debility.

b. *Jivaniya (Vitality promoter)*: This medicinal plant is vitality promoter, maintain the balance between three *doshas* i.e. *Vata*, *Pitta* and *Kapha*. It enhances the energy, body strength, skin glow and other properties of the body.

c. *Bramhaniya (Body mass promoter)*: This medicinal plant is body mass promoter. it is described within the *Brmhaniya varga*.

d. *Ayushya (Longevity)*: This medicinal plant mitigate the disorder of the body and specifically alleviate *Tridosaja* disorder in the body to increase the longevity and slow down the process of aging.

e. *Antioxidant activity*: Pseudo bulb extract of *Crepidium acuminatum* shows antioxidant activity.

f. *Antifungal and Antibacterial Activity*: Extract of *Crepidium acuminatum* shows antifungal and antibacterial activites.

g. The ethanol extract of its pseudo bulb exhibit analgesic and anti-inflammatory activity in experimental animals.

Classical Medicinal Uses

a. Intake of *Mahamayur Ghrita* processed with *Jivaka* and other herbs is useful in *Rasaraktadi dhatugat vikara*, *shrotadi indriya vikara* (sensory organ disorders), *svarabhransa* (Aphesia), asthma, cough, facial paralysis, vaginal disorders, blood disorders and semen related problems.

b. Intake of powder prepared from *Jivaka* and other herbs mixed with an appropriate quantity of honey and crystal sugar is useful in cough and cardiac diseases.

c. *Vacadi Taila* processed with *Jivaka* and other herbs used as *anuvasana vasti*; is beneficial for *Gulma*, distention, *Vata* associated disorders and urinary incontinence.

d. Intake of *Jivaniya Ghrita* processed with *Jivaka* is useful for the whole body vitiated with gout and *Vata* associated disorders

e. *Citrakadi Taila* processed with *Jivaka* and other herbs is useful in *Vata* associated disorders, sciatica, limping, kyphosis, gout and urinary disorders.

f. *Mahapadma Taila* processed with *Jivaka* and other herbs is useful in gout and fever.

g. *Jivaniya Ghrita* processed with *Jivaka* and other herbs, used properly, can be effective in treating gout and other chronic *Vata* associated disorders.

h. *Asthapana vasti* processed with *Jivaka* and other medicinal herbs is useful in treating *Gulma*, metrorrhagia, anaemia, malaria.

i. Intake of *Ghrita* processed with *Devadaru*, *Kakoli*, *Jivaka* and other medicinal herbs given in proper dose is useful in child emaciation.

j. *Himavana Agada* prepared with the powder of *Pancavalkala*, *Jivaka* and other herbs mixed with honey to make a paste and external application of this paste on snake bite reduces the toxicity. It also alleviates other symptoms like edema, erysipelas, boils, fever and burning sensation.

Traditional Medicinal Uses

a. Decoction prepared from its pseudo bulb is useful in general debility.

b. Intake of powder prepared from its pseudo bulb is useful in seminal weakness.

c. Intake of its pseudobulb powder promotes lactation.

Substitute and Adulterant

Varahikand (*Dioscorea bulbifera* L.) and Guduchi (*Tinospora sinensis* (Lour.) Merr.) is used as a substitute.

Discussion

Crepidium acuminatum (Jivaka) the plant found in in Central and Eastern Himalaya from Uttarakhand to Assam, Sikkim and other neighboring states is of significant importance due to its multipurpose efficacies in the management of different disorders and maintenance of proper health. *Crepidium acuminatum* (Jivaka) is one of 292 species in the genus *Crepidium*, family Orchidaceae. *Crepidium acuminatum* (Jivaka) can provide miraculous solutions for many serious disorders. The environmental protection and conservation of *Crepidium acuminatum* (Jivaka) require immediate attention. A detailed and serious survey of its natural habitat is required, to ensure its availability. Another research study is required to find

out its ecological behavior in the natural environment - so that to increase its density research work could be initiated in this direction. This is possible through tissue culture and modern agricultural practices.

Conclusion

The information generated from the present regarding *Crepidium acuminatum* (Jivaka), need a thorough phytochemical investigation including alkaloid extraction and isolation with some clinical trials, biological evaluation on experimental animal models, toxicity studies etc. People are cultivating *Crepidium acuminatum* (Jivaka) for their economic upliftment and thereby protecting the species from danger of extinction. But there is an urgent need in addition to protection and conservation and to create mass awareness among the local people regarding the promotion of therapeutic efficacy of this precious species.

The paper highlights the information to conserve *Crepidium acuminatum* (Jivaka) for sustainable medicinal uses for the future generation. Since *Ayurveda* and ethnobotany continue to play a major role in the medical therapy, it is of utmost importance to conserve these resources for the welfare of mankind. This species have been listed as "Endangered" (Ved et al., 2003) for the globe, however, based on its low density, frequency and abundance in natural pockets in Himachal Pradesh, Jammu & Kashmir and Uttarakhand, it deserves to be categorized as "Critically Endangered" for the globe; the natural habitats of these species throughout the Himalayas need to be identified and officially protected for conservation.

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