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THERAPEUTIC IMPORTANCE OF *PASHANABHEDA* IN CLASSICAL AND CONTEMPORARY MEDICINE: A REVIEW

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ABSTRACT

The *Pashanabheda Bergenia ciliata* [Haw].Sternb. is an evergreen perennial herb belonging to the family *Saxifragaceae*. The rhizome of "*Pashanabheda*" [stone breaker] is attained from *B.ciliata [Haw].sternb*. Its root, rhizome and also whole plant parts are used as a medicine. Rhizome and roots contain a C-glycoside called *Bergenin*, Beta-sitosterol, gallic acid, leucine and threonine. There are three species of genus *Bergenia in* India which are known by the names of *B.ciliata, B.lingulata* and *B.stracheyi*.Since it imparts different properties i.e. diuretic, anti-inflammatory, astringent, cardiotonic, wound healer and hepatoprotective activity.The main chemical constituent of *Bergenia ciliata* is *Bergenin.* The present study is revealing the multiple uses of the *Pashanabheda* and therefore their conservation is necessary.

Keywords *Pashanabheda, B.ciliata, Ashmabhed*

INTRODUCTION: The *B. ciliata* is a herb distributed in temperate *Himalayas*. The information regarding its medicinal usage is available from *Vedi*c period to the contemporary era. *B. ciliata*, commonly known as *Pashanbheda* in Hindi. The name "*Bergenia*" was coined by *Conrad Moench* in 1794, in the memory of *Karl August von Bergen* (German botanist and physician). *Genus Bergenia* encompasses 32 species of flowering plants, including highly valued ornamental, rhizomatous and temperate medicinal herbs [1]

In *Ayurveda*, this drug is mentioned by the name *Pashanabheda* (*Pashanam Ashmari Bhinnatitti*) its rhizomes (*Kanda*) are used to treat *Mutra Ashmari* (~renal calculus) and other *Mutra Vikaras*. This drug is a part of many *Ayurvedic* formulations, such as *Asmarihara Kasaya Churna* and *Mutravirecaniya Kasaya Churna* etc. (API, 2001) [2].

World Health Organization opines that medicinal plants would be the best source for obtaining a variety of drugs [3]. The therapeutic properties of this drug have been mentioned in *Vedas, Brihttrayi* and also in various *Nighantu*s. Acharyas quotes *Pashanabheda* by various synonyms such as *"Pashana", "Ashmabhid", "Ashmabhed", "Asmaribheda(it breaks open the ground in sprout)and "Shilabhed"* [4]

AIM AND OBJECTIVE – Present article aims towards exploring the Therapeutic importance of *Pashanabheda* in classical and contemporary medicine**.**

MATERIAL AND METHODS - It is a literary review to understand the therapeutic importance of *Pashanabheda* in classical and contemporary medicine with the help of data collected from classical and contemporary *Ayurvedic* texts and published research articles.

Regional Names -

English- Winter Begonia
Sanskrit- *Pashanabheda*
Hindi-*Pashanbhed, Dakachru*
Kannada- *Pashanbhedi*
Marathi -*Pasanbheda*

CLASSIFICATION-

a) According to Ayurveda - The plant *Pashanabheda* was first mentioned in *Charaka Samhita* in the group of *Mutravirecaniya Mahakashaya* [5] and in *Sushruta Samhita* the plant comes under *Veertvaadigana*[6] also in *Astangahridayam*[7] and various *nighantus* like *Bhav-prakash Nighantu* etc [8]

Table-1 b) Taxonomical Classification-

Kingdom	Plantae
Phylum	Tracheophyte
Class	Dicotyledons
Order	*Saxifragales*
Family	*Saxifragaceae*
Genera	*Bergenia*
Species	*ciliata.f.ciliata*

MORPHOLOGY: -The plant is a much-branched perennial temperate herb, grows up to 30 cm tall,

Stem is short.

Leave -are very few, dark-brown, ovate, 12 – 25 cm in diameter, sessile, rounded at apex, fringed with short hairs.

Flowers are pinkish and whitish in color with diameter of about 3 cm forming a cymose panicle**.**

Fruits- Drupes, Orange and red in color [9].

USEFUL PART– Whole plant specially Rhizome and Root[9].

Image 1 Bergenia ciliata[Haw].Sternb.
Photo by Dr *Karishma*
Identification credit – *Dr Ramakant Marde*
Photographed in – Company Garden, Mussoorie , Uttarakhand, India

IMPORTANT PHYTOCONSTITUENTS-

The root was shown to include flavonoids, glycosides, sterols, terpenoids and saponins. The Aqueous extract of rhizomes were exhibited the existence of *bergenin*, phenolic compounds leucocyanidin, gallic acid, methyl gallate, catechin and polymeric tannin [10].

Table-2 *RASA PANCHAKA*

Rasa	*Kasaya Tikta (Madhura-Raj.Ni)*
Guna	*Tiksna Snigdha*
Vipaka	*Katu*
Virya	*Sita*
Prabhava	*Asmarighna*

***Dosha Karma* (Action on *Dosa*)-**

Tridosha samaka, Vata Shamaka due to its *Snigdha Guna* and *Pitta Shamaka* because of *Kashaya Tikta* and *Sita virya*, and *Kaphahara* because of *Kashaya Tikta Rasa* and *Katu Vipaka.*

***KARMA* [Pharmacodynamics]and *PRAYOGA*[Indication]-**

In the Bhavaprakash Nighantu a classical texts of *Ayurveda*, *Pashanabheda* described as in *Basti Shodhaka* (~Diuretics), *Ashmarihara* (litholytic property), *Shoola Hara* (~Analgesic) and Hridya (~Cardio-tonic) [8].

Other uses-: The broad leaves of *Pashanabheda* are used to cure Jwara . The leaf extract of *B. ciliata* possesses anti-malarial property. Its leaves are revered to as "*Pashanabheda*", which designates the litholytic property [11]. One teaspoonful of the juice of dried rhizome of *B. ciliata* with an equal amount of honey has been taken orally 2-3 times a day by post-partum women, against the digestive disorders as carminative and tonic as well. Rhizomes have been taken orally by human adults as an anthelmintic [12, 13, 14]. The root, rhizome and leaf powder of B.ciliata are used by local tribes for piles treatment [15]. The ethanolic leaf extracts of the plant have promising activity against malarial parasites: *Plasmodium falciparum and P. berghei* [16].

Ethnically the flowers are used as a good luck in a local festival called 'Phool Sangran' in *Uttrakhand*. The people also use this plant as an ornamental one in their garden due to its beautiful flowers.

Table-3 PHARMACOLOGICAL ACTIONS:

Plant part	Activity	Reference
Rhizome	Anti-pyretic activity	Sinha S, *et al*002[17]
	Anti-inflammatoryActivity	Sinha S, *et a*l2001[18]
	Anti-bacterialActivity	Sinha S, *et al*2001[19]
	Anti-tussive activity	Sinha S, *et al*2001[20]
	Anti-oxidant activity Anti-oxidant activity	Rajkumar V, et *al* 2010[21] Bagul *et al*,2003 [22]
	Toxicity activity	Islam *et al*,2002 [23]
Leaf	Anti-malarial activity	Walter NS,*et al* 2013[24]

Pharmacological uses-

- **Anti-oxidant activity**-The methanolic extract of rhizomes of *Bergenia ciliata* showed a crucial effect to scavanges free radicals of superoxide ions and nitric oxide ions. Some observers presented that extract was a good scavenger of DPPH radical at an EC of 36.24 µg/ml. The methanolic extract scavenged superoxide ions at a standard dose with EC of 106.48 µg/ml (Bagul et al. 2003) [22].
- **Toxicological activity-** The acute, systematic and intracutaneous effect shown of *B.ciliata* when applied in animals. It unveiled symptoms of several diseases such as erythema, edema, breathing problem, and gastero-intestinal problems in acute systematic case. (Islam

et al. 2002) [23]. The cardiotoxic, anti-diuretic, and anti-depressants action on nervous system shown in *B.ciliata* rhizome in case of higher dose administered.

- **Anti-malarial activity**-The extraction of part exhibited good anti-plasmodial activity, with an IC50 < 0.0005) increased the mean survival time of rice in comparison to infected control, which exhibited a mean survival time of 8.6 ± 1.5 days (Walter et al. 2013) [24].

Controversy with Substitutes:

Pashanabheda is a highly controversial drug. There has been widespread controversy with reference to the exact identity of these plants. *Pashanabheda* of North, South, and East are different plants. At present, the following plants are being used as *Pashanabheda* in different part of India [25] and it has given below in the table. But originally *B.ciliata* Haw.sternb.is identified as the source of *Pashanbheda* [API,18].

Table-4 Different medicinal plant species used as *Pashanabheda* [25]

Sl no.	Botanical name	Family
1.	*Saxifragata lingulata* Wall.	*Saxifragaceae*
2.	*Coleus aromaticus* Benth.	*Labiateae*
3.	*Bryophyllum calcynum* Salisb.	*Crassulaceae*
4.	*Aerva lanata* Juss.	*Amaranthaceae*
5.	*Aerva javanica* Juss.	*Amaranthaceae*
6.	*Ammania baccifera* Linn.	*Lythraceae*
7.	*Rotula aquatica* Lour.	*Boraginaceae*
8.	*Bridelia montana* (Roxb.) Willd.	*Euphorbiaceae*
9.	*Homania riporia* Lour.	*Euphorbiaceae*
10.	*Ocimum basilicum* L.	*Labiatae*

MATRA (Therapeutic Dose)- *Mula/Kanda churna*(Powder of rhizome)-1 to 3 g

DISCUSSION– Plants have been playing a vital role in sustaining human health. In the present time, focus on plant research has increased all over the world enormously. *Pashanabheda* is a widely used medicinal herb. The herb mostly found in Himalayas and *Khasi* hills.The main chemical constituent found in it named as *Bergenin.* The rhizome is used as litholytic. There are many plant species which are used in name of *Pashanbheda* in different parts of India,whose botanical identities remain unresolved and are referred as controversial drug but according to A.P.I. (*Ayurvedic* pharmacopoeia of India) mainly *B.ciliata Haw.sternb*. is accepted as a *Pashnabheda* which possesss many therapeutic uses.

CONCLUSION-

In the present study, various aspect such as therapeutic, toxic effects and Phyto-pharmacological acitivies of *B.ciliata* are reviewed. According to above said it can be opined that in *Ayurveda* Pashanbheda has been described for its therapeutic properties for various *Mutra Vikaras* specially *Mutra Ashmari etc.* The phytochemicals present in *B.ciliata* exhibit various biological activities like Anti-oxidant, Anti-malarial, and Anti-urolithic activities there by demonstrating the miscellaneous usefulness of the plant. Every part of the plant is used, but the most frequent part used is rhizome. Present study reveals the regarding therapeutic potential of *Pashanabheda* in many

diseases especially in diseases related with urinary system. Various studies conducted in contemporary science might provide scientific evidences for ancient principles of Ayurveda.

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