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ENDEAVOUR OF PASHANABHEDA(BERGENIA LIGULATA (WALL.)ENGL.) IN UROLITHIASIS

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ABSTRACT :

Urolithiasis is the formation of urinary calculi which are calculi formed or located anywhere in the urinary system. It comprises nephrolithiasis(the formation of kidney stones), ureterolithiasis (the formation of stones in the ureters) and cystolithiasis(the formation of bladder stones). Ayurvedic ancient texts have mentioned *Pashanabheda* (*Bergenia ligulata* (Wall.) Engl.), Family: Saxifragaceae, having an anti-urolithiatic property. As this is having *Laghu, Snigdha, Tikshna Guna, Kashaya, Tikta Rasa, Katu Vipaka, Shita Virya* and *Ashmarighna Prabhava*. By the virtue of above property this is *Tridoshashamaka*. It is commonly known as *Patharchur* is a perennial herb with thick rootstock occurs in temperate regions. *Pashanabheda* contains a number of bioactive chemicals, including tannic acid, gallic acid, starch, mineral salt, metarvin, albumin, glucose, mucilaginous matter, wax and aromatic substance. It is used as a diuretic and anti-calculus medicine. It is an antidiabetic drug, astringent, cardiotonic, expectorant, antipyretic, antidote to poison, anti-inflammatory, wound healer and anti-haemorrhoidal and it allays burning sensation and excess thirst. The present review is therefore, an effort to give a detailed focus on its botanical details, phytochemistry, pharmacodynamics, etiopathogenesis and its therapeutic importance.

Key words: Ayurveda, *Pashanabheda, Bergenia ligulata, Shothahara*,Urolithiasis, *Ashmaribhedaka*.

INTRODUCTION: Urolithiasis is the formation of urinary calculi which are calculi formed or located anywhere in the urinary system. It comprises nephrolithiasis(the formation of kidney stones), ureterolithiasis (the formation of stones in the ureters) and cystolithiasis(the formation of bladder stones). Urinary calculi consist of aggregates of crystals containing small amounts of proteins and glycoprotein. Renal stones in which the crystalline component consist of calcium oxalate are the most common and stones containing calcium as oxalate, phosphate or both comprise about 80% of the total. About 15% contain magnesium ammonium phosphate and small numbers of pure cystine or uric acid stones are found. Rarely drugs may form stones e.g. indinavir, ephedrine. Urinary concretions vary greatly in size. There may be particles like sand any where in the urinary tract or large round stones in the bladder. Staghoren calculi fill the whole renal pelvis and branch into the calyces. Deposit of calcium may be present throughout the renal parenchyma, giving rise to nephrocalcinosis[1].

LITERATURE REVIEW: The literary review of the *Pashanabheda* was started right from the *Vedas* up to recent research works to obtain thorough knowledge of drug. On comprehensive review of Ayurvedic classics it was found that *Pashanabheda* is described in *Vedas, Charaka Samhita, Sushruta Samhita, Nighantus* and *Chikitsagranthas*.In *Charaka Samhita, Pashanabheda* is

described in *Mutravirechaniya Mahakashaya*[2]. In *Sushruta Samhita*, it is described in *Viratarvadi gana*[3]. One should take *nala, pashanabheda, darbha, ikshu* and seeds of *trapusha* and *ervaru* boiled in milk and added with ghee used in calculus, retention of urine and dysuria[4].

Pashanabheda is mentioned in *Nighantus* also. In *Kaideva Nighantu* it is described as the synonyms and properties as *ashmabheda*[5]. In *Bhavaprakash Nighantu*, it is described as the properties as *bastishodhana*[6]. In *Raj Nighantu*, it is described as the properties as *ashmaghna, mutrakrichhraghna*[7].

It is also mentioned in *Chikitsa Granthas* like *Chakradatta*, it is described as *Pashanabhedadya ghrita* for the treatment of *vatajanya ashmari, mutraghata* and *mutrakrichhra*[8]. *Pashanabhedadya churna* and *ghrita* used for the same[9]. *Bhavamishra*, in his section *Bhavaprakash, madhyamakhanda* mentions *shilodbhidadi taila* for the treatment of *mutrakrichhradi roga*[10] and *pashanabhedadya ghrita* for *vataja ashmari*[11].

Pashanabheda[12]:A perennial herb with thick rootstock. Stem short, fleshy, procumbent, small plant growing closely appressed to rocks with leaves about 10 in diam. Leaves ovate or orbicular, entire, ciliate, base cordate, glabrous on both surfaces, dotted on the lower stalk, stem sheathing at the base. Flowers white, pink or purple, in spreading cymose panicle terminating in flexible scape. Petals orbicular with a claw. Fruits globose, style long. Flowering and fruiting time is spring season to summer or rainy season.

Plant occurs in temperate regions from Kashmir region to Bhutan. It is found in the Himalayas between the altitudes of 2000 and 2500 meters, commonly on the rocks in forest of hilly regions. Generally it grows wild at 8000-10000 ft. elevation in the Himalayan regions and also found in the Khasi hills and other areas in North-East Himalaya at about 4000 ft. altitude.

There are two other Himalyan species of Bergenia which are also used as botanical source (substitutes or adulterants) of drug *Pashanabheda*. They are Bergenia ciliate Royle. and Bergenia stracheyi (Hook. f. Thoms.) Engl. Some other medicinal plants claimed as *pashanabheda* are Konchoe pinnata Pers. (Crassulance), Coleus ambonicus Benth. (Lamiaceae), Aerva lanata Juss. (Amaranthaceae) Iris, pseudo-acorus (Iridac), Ocimum basilicum Linn. (Lamiaceae), Bridelia retusa Spreng, (Euphorbiaceae) and Rotula aquatic Lour. (Boraginaceae). Currently the botanical source of *pashanabheda* is acceptable as Bergenia ligulata (Wall.) Engl.

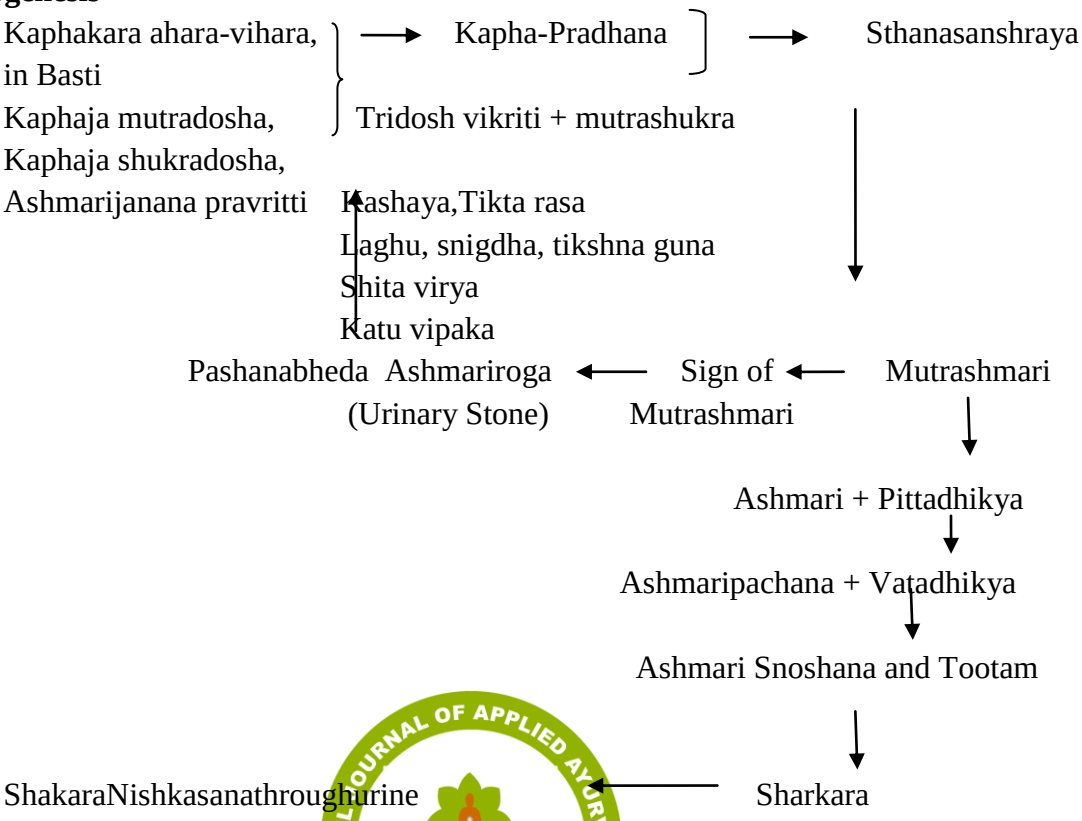
Chemical composition[13]:

Roots contain tannic acid (14.2%), gallic acid, starch 19%, mineral salt, metarvin, albumin, glucose, mucilaginous matter, wax and aromatic substance. Ash 12.87% which contains oxalates predominantly.

Pharmacodynamics[14]

Rasa : *Kashaya, Tikta*
Guna : *Laghu, Snigdha, Tikshna*
Virya : *Shita*
Vipaka : *Katu*
Doshakarma : *Tridoshashamaka.*
Prabhava : *Ashmaribhedana*

Etiopathogenesis[15]



Therapeutic uses: The drug *Pashanabheda* is diuretic and anti-calculus medicine. It is an antidiabetic drug, astringent, cardiotonic, expectorant, antipyretic, antidote to poison, anti-inflammatory, wound healer and anti-haemorrhoidal and it allays burning sensation and excess thirst. The decoction or powder of roots is orally given in calculus and other urinary complaints as an effective remedy which is a valued herbal drug widely administered in management of *ashmari*[16] and *mutrakrichhra, bastishula, mutraghata* and urinary tract infection along with allied complaints of urinary system. The dried roots pieces forming the crude drug useful in some other diseases in addition to urinary or renal disorders. It is used in heart trouble, intrinsic haemorrhage, vaginal complaints, leucorrhoea, menorrhagia, fever, diarrhea, dysentery, piles, cough and burning sensation. Externally the root is applied on boil-swelling and conjunctivitis. It is mixed with honey and applied to teething in children. The drug is indicated against opium-poisoning[17].

Pharmacological studies

- **Anti-inflammatory activity**

Evaluation of the anti-inflammatory activity of aqueous and 50% ethanolic extracts of the rhizomes of *Bergenia ligulata* are reported to attenuate the inflammatory response as determined by pharmacological and biochemical measurements[18-20,21].

- **Antilithic activity**

The alcoholic extract had no effect in preventing stone formation in rats (after the method of Lyon) but was of significant help in dissolving preformed stones[22,23].

- **Diuretic activity**

The ethanolic extracts of root of *Bergenia ligulata* were assessed for diuretic activity in albino rats that was compared with standard drugs[24].

- **Anti-bradykinin activity**

The alcoholic extract of *Bergenia ligulata* rhizome displays marked anti-bradykinin activity[25].

CONCLUSION:

On comprehensive review of Ayurvedic classics it was found that *Pashanabheda* is described in *Vedas, Charaka Samhita, Sushruta Samhita,*. Some synonyms of *pashanabheda* like *Ashmaghna, prastara, nagabhedaka* and *ashmabheda* described in various *Nighantu*. Pashanabheda (*Bergenia ligulata* (Wall.) Engl.), Family: Saxifragaceae, is commonly known as *Patharchur* having an anti-urolithiatic property. As this is having *Laghu, Snigdha, Tikshna Guna, Kashaya, Tikta Rasa, Katu Vipaka, Shita Virya* and *Ashmarighna Prabhava*. By the virtue of above property this is *Tridoshashamaka*. It is used as a diuretic and anti-calculus medicine. It is an antidiabetic drug, astringent, cardiotonic, expectorant, antipyretic, antidote to poison, anti-inflammatory, wound healer and anti-haemorrhoidal and it allays burning sensation and excess thirst. Doses of root powder is 3-6gm. Decoction 50-100ml. Part used is roots. Specific formulations are *Pashanabhedadi kwatha, Pashanabhedadya ghrita*.

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