

AYURVEDIC APPROACH FOR THE TREATMENT OF ASHMARI

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ABSTRACT

The word *Ashmari* is made up of two words “*Ashma* and *Ari*”. *Ashma* means stone or a gravel and *Ari* means enemy. *Ashamri* is a disease in which there is formation of stone, exerting great suffering to human beings like an enemy. The description of *Ashmari* is the specific contribution of *Acharya Sushruta*. He has included *Ashmari* in *Ashta Mahagada* i.e. the eight most troublesome diseases. The specific name of *Ashamri* is *Mutrashmari* which is related with *Mutravaha Strotsa. Basti* (Urinary bladder) is the main site (*Adhithana*) of *Ashmari*. The incidence of *Mutrashmari* are increasing day by day due to various reasons like altered food habits, change lifestyle, stress, strain, environmental pollutions etc. This *Mutrashmari* (Urolithiasis) can leads to defects in the formation of urine and micturition. A urinary stone causing partial occlusion to the urinary tract may lead to hydronephrosis and subsequent destruction of parenchyma leading to renal failure. In Ayurveda mainly three types of drugs i.e. *Mutravirechaniya* (diuretic), *Ashmarighna* (lithotriptic) and *Shophaghna* (anti-inflammatory) are prescribed for the treatment of Renal stones. Actions of these drugs subsides the symptoms of Renal stones and even prevent the recurrence of stones.

KEYWORDS: *Ashmari*, *Ashta Mahagada*, *Mutra Nirmana*, *Mutravaha Dhamanies*, *Mutravirechaniya*, *Ashmarighna* and *Shophaghna*.

INTRODUCTION

The word *Ashmari* is made up of two words *Ashma* means stone or a gravel and *Ari* means enemy. *Ashamri* is a disease in which there is formation of stone, exerting great suffering to human beings like an enemy. The description of *Ashmari* is the specific contribution of *Acharya Sushruta*. He has included *Ashmari* in *Ashta Mahagada* i.e. the eight most troublesome diseases. The specific name of *Ashamri* is *Mutrashmari* which is related with *Mutravaha Strotsa. Basti* (Urinary bladder) is the main site (*Adhithana*) of *Ashmari*. *Acharya Charaka* mentioned *Basti* under *Dashvidha Pranayatana* i.e. ten vital organs of the body. *Acharya Sushruta* classified *Basti* as *Sadhyapranahara Marma* i.e. injury to these *Marma* can leads to immediate death of the person.

The *Adhithana* of *Ashmari* is undoubtedly the *Basti*. The description regarding the formation of *Ashmari* available in *Sushruta Samhita* is highly suggestive of bladder calculi. However, it is evident that *Ashmari* can occur in any part of the urinary system, but its formation in other parts of the system other than *Basti* not separately described in any *Ayurvedic* texts. So, it is logical and convenient to consider the term *Basti* refers to the urinary system.

The incidence of *Mutrashmari* is increasing day by day due to various reasons like altered food habits, change lifestyle, stress, strain, environmental pollutions etc. This *Mutrashmari* (Urolithiasis) can leads to defects in the formation of urine and micturition. Urolithiasis has high prevalence and recurrence rates along with vast complications. A urinary stone causing partial occlusion to the urinary tract may lead to hydronephrosis and subsequent destruction of parenchyma leading to renal failure.

DISCUSSION

The kidneys are bean shape organs that handle the body's fluid and chemical level. Healthy kidneys clean waste from the blood and remove it in the urine. Urine contains many dissolved minerals and salts. When urine has high levels of these minerals and salts, formation of stones starts. These stones can start small but can grow larger in size, even filling the inner hollow structures of the kidney. Some stones stay in kidney without creating any troublesome.

Sometimes, can travel down the ureter. If the stone reaches the bladder, it can be passed out of the body in urine. If the stone becomes lodged in the ureter, it blocks the urine flow from that kidney and causes pain.

Kidney stones may be Calcium stones (most common 80% of all stones) – calcium oxalate and calcium phosphate, Uric acid stones (5-10 %), Struvite/infection stones (10%) and Cystine stones (<1%).

Major causes are

1. Low urine volume due to dehydration from hard exercise, working or living hot place or not drinking enough fluids.
2. Diet containing foods rich in oxalate, high in animal protein and excessive calcium intake.
3. Obesity can change the acid levels in the urine, leading to stone formation.
4. Medical conditions like abnormal growth in parathyroid gland (controls calcium metabolism and cause renal tubular acidosis) and various inherited disorders leads to cystinuria, primary hyperoxaluria etc.
5. Medication such as calcium and Vitamin C supplements.
6. Family history.

Symptoms

Pain – Sharp cramping in back and side, often radiates to the lower abdomen or groin. Sudden onset and comes in waves. It can come and go as the body tries to get rid of the stones.

- Feeling of intense desire to urinate.
- Burning micturition.
- Dark or red urine due to blood.
- Nausea and vomiting.

The concept of *Mutra Nirmana* (urine formation) in *Ayurvedic* classics is same according to different *Acharyas* i.e. from ingested *Ahara*. It is waste excretory product of *Ahara* along with *Purisha*. According to *Acharya Sushruta*, two *Adhogami Dhamanias* carry the *Mutra* to *Basti* and so named as *Mutravaha Dhamanias*. Various *Nidana* mentioned in *Ayurvedic* texts which leads to the formation of *Mutrashmari*. These are *Apathya Sevana- Adhayshana* (indulge themselves in eating again before the digestion of previous meal), *Shita* (eating cold food stuffs), *Guru* (heavy), *Snigdha* (fatty) and *Madhura Ahara* (sweet) in excess, *Divaswapana* (sleeping in day time), not undergone *Samshodhana* (purification of body) treatment. Due to *Nidana Sevana*, *Doshas* get aggravated along with *Dushya* and causes *Stroto Dushti*. After that the disease manifests in the body.

In the formation of *Ashmari*, *Acharya Sushruta* says-

- As clean water in a new pitcher gets muddy precipitates due course of time, in similar way calculi are formed.
- As air and fire of electricity in the sky consolidate water to form hail stone, similarly
- *Pitta* located in the bladder in conjugation with *Vayu* consolidates *Kapha* to form calculi.

Acharya Charaka writes that the formation of

Mutrashmari is similar to the formation of *Gorochana* by the *Gopitta*.

It is a specificity in *Ayurveda* to describe prodromal symptoms (*Purvarupa*) of every disease so that clinician can recognize the impending disease in its early stage and can plan out the management. These are *Jwara* (fever), *Bastipeeda* (pain in lower abdomen), *Bastishira-Mushaka-Shefasama Vedana* (radiating pain to Penis and Scrotum), *Mutrakrichham* (dysuria), *Arochaka* (decreased appetite and nausea), *Bastagandhitavam* (smell in the urine).

Rupa (Lakshanas) are the signs and symptoms presented at the actual stage of manifestation of the disease. Following *Lakshanas* are described by *Acharya Sushruta*:

- *Nabhi-Basti-Sevani-Mehan Mahato Vedana* (excessive pain in lower abdomen radiating toward tip of penis in male and labia majora in females)
- *Mutrardharasanga* (obstruction in flow of urine)
- *Sarudhira Mutrata* (haematuria)
- *Gomedaka Prakasam Atyaavila* (clear urine like *Gomeda Manni*)
- *Sasiktam* (urine mixed with gravels)
- *Dhawan-Laghan-Plavana-Prishthayana-Adhava Gamane Vedana* (pain during running, fasting, swimming, ridding, walking)

Ayurvedic herbs for mutra-ashmari

In *Ayurveda* mainly three types of drugs i.e. *Mutravirechaniya (diuretic)*, *Ashmarighna (lithotriptic)* and *Shophaghna (anti-inflammatory)* are prescribed for the treatment of Renal stones. Actions of these drugs subsides the symptoms of Renal stones and even prevent the recurrence of stones. These single herbs include:

1. *Pashanbheda*
2. *Varuna*
3. *Kulattha*
4. *Gorakshganja*
5. *Punarnava*
6. *Gokhura*
7. *Virataaru*

Pashanbheda

Botanical name: *Bergenia ligulate* Wall. Engl. Family: Saxifragaceae

Habit: Perennial herb with stout rootstocks.

Habitat: Temperate Himalayas between altitude of 900-3000 m. Pharmacodynamic Properties:

Rasa- Kshaya, tikta

Guna- Laghu, tikshan, snigadVeerya- Sheeta

Vipaka- Katu

Prabhava- Ashmari- bhedana Dosha Karma: Tridosha shamaka Part Used: Rhizome

Chemical constituents: Bergenin, β -sitosterol, catechin-3 gallate.

Classical Therapeutic Usage:

In *Ashmari* and *Mutrakriccha*, *Nala*, *Pashanbheda*, *Darbha*, *Ikshu*, *Trapusa* and *Ervaru beeja* are boiled with milk and given with honey. (S.S.Ut.58).

Mechanism of Action

- *Bergenia ligulata* rhizome contains bergenin which inhibits calcium oxalate crystal aggregation as well as exhibits antioxidant effect against free radical and lipid peroxidation. Thus, it is used as an anti-uro lithiatic agent.
- Paashanolactone, a key component isolated from *Bergenia ligulate* rhizomes, has been shown to have anti-inflammatory properties.

Thus, *Pashanbheda* is used as medication for treating renal stones primarily by its diuretic and lithotriptic action.

Varuna

Botanical name: *Crateva nurvala* Buch-Ham. Family: Capparidaceae

Habit: A deciduous, medium sized-tree which reaches height up to 50 feet.

Habitat: It usually grows in the southernmost mountains in the Himalayan range and is indigenous to Karnataka, Kerala and Tamil Nadu.

Pharmacodynamic Properties

Rasa- Tikta, Kshaya Guna- Laghu, ruksha Veerya- Ushna Vipaka- Katu

Prabhava- Ashmari- bhedana

Dosha Karma: Kapha-Vata Shamaka & Pitta Vardaka

Part Used: Root bark, stem bark

Chemical constituents: Lupeol, Rutin, Varunol, Quercetin, β -sitosterol.

Classical Therapeutic Usage

- In *chikitsa sthana*, *Varuna* is mentioned in *Vatika Ashmarihara grutha* and *Kaphaja Ashmari hara yoga*. (S.S.Chi.7/6, 14).
- *Varuna* root and stem bark paste as well as decoction are administered orally in *Ashmari*. (Vrnda Madhav).

Mechanism of Action

- Lupeol present in *Varuna* prevents the deposition of calcium and oxalate in the kidney by inhibiting the activity of the Liver enzyme glycolic acid oxidase.
- Therefore, *Varuna* is used to treat hypercrystalluria, hyperoxaluria and hypercalciuria.
- Lupeol also possesses anti-pyretic, analgesic and anti-inflammatory activity. Thus, *Varuna* works on renal stones primarily by lithotriptic and anti-inflammatory activity.

Kulttha

Botanical name: *Dolichos biflorus* Linn. Family: Fabaceae.

Habit: A slender, trailing or sub-erect, branched annual

herb. Habitat: Native to India and is found at an altitude of up to 1000 m. Pharmacodynamic Properties:

Rasa- Kshaya

Guna- Laghu, ruksha, tikshna Veerya- Ushna

Vipaka- Amla

Prabhava- Ashmari- bhedana

Dosha Karma: Kapha-Vata Shamaka & Rakta- Pitta Prakopka

Part Used: Seeds

Chemical constituents: Genistein, Dalbergioidin, phase-collidin, Quercetin, Tannins. Classical Therapeutic Usage:

- In *Bhav Prakasha*, *Kultthadya ghrita* is indicated in Calculus. Mechanism of Action:
- The Tannins and flavonoids (Quercetin) present in *Dolichos biflorus* lead to relaxation of smooth muscles of the urinary tract which in turn facilitates the expulsion of stones from both the kidneys (Calixto et al., 1998)
- Quercetin present in *D. biflorus* shows inhibition of ACE (Angiotensin converting enzymes) activity which results in significant reduction of renal Calcium oxalate crystal deposition as well as interstitial inflammation. (Toblli et al., 2001)
- Quercetin also effectively reduced the lipid peroxidation and restores the antioxidant enzyme activity.
- Thus, *Kulttha* is used as medication for treating Renal stones primarily through its antioxidant and anti-inflammatory activity.

Gorakshganja

Botanical name: *Aerva lanata* Juss. Family: Amaranthaceae

Habit: A semi erect many branched under shrub which grows up to 50 cm in height.

Habitat: It grows throughout India in the plains up to 1000 meters on the hills, Ceylon, Arabia, Tropical Africa, Java, Phillipines.

Pharmacodynamic Properties:

Rasa- Tikta, Kshaya Guna- Laghu, tikshna Veerya- Ushna Vipaka- Katu

Prabhava- Ashmari- bhedana

Dosha Karma: Kapha-Vata Shamaka

Part Used: Root

Chemical constituents: Palmitic acid, β -sitosterol and alpha-amyrin Mechanism of Action:

- Quercetin and botulin present in *Aerava lanata* causes inhibition of formation of oxalate by inhibiting the activity of Oxalate oxidase enzyme which is responsible for the stone formation.
- Both quercetin and botulin significantly increased the urinary magnesium level. Thus, magnesium inhibits the oxalate absorption and excretion and prevents its supersaturation. Thereby, reduces the risk of calcium oxalate stone formation.
- Quercetin and botulin also produce diuretic effect.

Thus, *Gorakshganja* is used for treating Renal stones primarily by anti-urolithiatic and diuretic actions.

Punarnava

Botanical name: *Boerhavia diffusa* Linn. Family: Nyctaginaceae

Habit: A creeping, perennial, much-branched herb with stout, fusiform roots.

Habitat: It is an indigenous herb found in the Himalayan region up to an altitude of 2000 meters in the temperate parts of the country.

Pharmacodynamic Properties:

Rasa- Madhura, Tikta and Kshaya

Guna- Laghu, ruksha Veerya- Ushna Vipaka- Madhura

Dosha Karma: Tridosahara

Part Used: Root

Chemical constituents: Punarnavoside, Borhaavone, Quercetin, Eupalitin, Punarnavine
Classical Therapeutic Usage:

- Milk cooked with *Haritakyadi (Triphala)* or *Punarnava* should be taken in Calculus.
- (Sushruta Samhita Ch. 7.26)
- In *Bhav Prakasha*, for the treatment of calculus, *Punarnavadya taila* is indicated. (B.P.Ch. 37.95-99)
- Mechanism of Action:
- Due to presence of Punarnavine in *B. diffusa* it exhibits diuretic action, increased urine volume decreases the saturation of the oxalate and prevents the precipitation of the calcium oxalate crystals at physiological pH. Diuresis also flushes out the renal system and helps in mechanical expulsion of stone.
- Eupalitin present in *B. diffusa* is accredited with NF- κ B inactivation activity (Pandey et al., 2005) which leads to inhibition of phospholipase A resulting in scavenging of Reactive oxygen species. Thus, *B. diffusa* via antioxidant property protects renal cell injury.

Thus, *Punarnava* is used as medication for treating renal stones primarily through its diuretic and antioxidant activity.

Gokshura

Botanical name: *Tribulus terrestris* Linn. Family: Zygophyllaceae

Habit: A prostrate shrub

Habitat: It is found throughout sub-tropical parts of India, ascending up to 1000 meter as a weed along roadsides and waste places.

Pharmacodynamic Properties:

Rasa- Madhura Guna- Guru, snighd Veerya- Sheeta Vipaka- Madhura

Dosha Karma: Vata-pitta Shamaka

Part Used: Fruit, root

Chemical constituents: Harman, Harmine, Quercetin, Kaempferol. Classical Therapeutic Usage:

- *Ghrita* cooked with decoction of *gokshura* and eight times milk should be taken. (Charak Samita. Ci.

26.74)

- Root of *gokshura*, *kokilaksha*, *eranda* and two types of *brihati* are pounded together with milk and dissolved in sweet curd for a week. It breaks calculus. (Charak Samita. Ci. 26.62)
- Powder of the seeds of *Gokshura* mixed with honey and taken with sheep milk for a week breaks calculus. (Sushruta Samhita Ci. 26.62)

Mechanism of Action

Quercetin and Kaempferol present in *T. terrestris* are found to be non-competitive and competitive inhibitors of GOX (Glycolate oxidase) which is principal enzyme involved in the oxalate synthesis pathway. Thus, exhibits anti-urolithic activity due to its GOX inhibition property.

Thus, *Gokshura* is used as medication for treating renal stones primarily through its diuretic and antioxidant activity.

Virataaru

Botanical name: *Dichrostachys cinerea* W. & A. Family: Mimosaceae

Habit: A perennial, highly variable thorny shrub or small tree.

Habitat: It is found in a variety of habitats, and is widely distributed in the seasonally dry tropics of Africa, Asia and Australia. In India, *D. cinerea* occurs in dry deciduous forests.

Pharmacodynamic Properties:

Rasa- Tikta, Kshaya Guna- Laghu, ruksha Veerya- Ushna Vipaka- Katu

Dosha Karma: Kapha-Vata Shamaka

Part Used: Root

Chemical constituents: β -amyrin, friedelin, β -sitosterol, Anthocyanin and Betacyanin, Coumarins, Terpenes, Cardiotonic Heterosides.

Mechanism of Action

Administration of *Kwatha* of *Virataaru* was studied in experimental animals and was found to increase urine output in dose-dependent manner may be due to its individual or combined bioactive components.

Thus, *Virataaru* is used as medication for treating renal stones primarily through its diuretic activity.

CONCLUSION

The incidence of *Mutrashmari* is increasing day by day due to various reasons like altered food habits, change lifestyle, stress, strain, environmental pollutions etc. This *Mutrashmari* (Urolithiasis) can lead to defects in the formation of urine and micturition. Although there are many treatment options available for the management of Urolithiasis but the conventional treatment is quite expensive and moreover, the recurrence occurs commonly. However, in *Ayurveda*, "the science of life", mainly three types of drugs i.e. *Mutravirechaniya* (diuretic), *Ashmarighna* (lithotriptic) and *Shophaghna*

(anti-inflammatory) are prescribed for the treatment of Renal stones. Actions of these drugs subsides the symptoms of Renal stones and even prevent the recurrence of stones. Thus, *Ayurvedic* drugs acts as anti-lithogenic by virtue of multiple actions such as diuretic, anti-inflammatory, analgesic activity and improve renal function and prevents the recurrence of renal stones.

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