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ABSTRACT

Ashmari is derived from the Sanskrit words “Ashma” (stone) and “Ari” (enemy), indicating a condition that produces severe pain and morbidity similar to that caused by an enemy. Its detailed description is attributed to Acharya Sushruta, who classified it under *Ashta Mahagada*, the group of eight most severe and difficult-to-treat diseases. *Mutrashmari*, a subtype of Ashmari, is a disorder of the *Mutravaha Srotas*, with the urinary bladder (*Basti*) being the primary site of manifestation. The incidence of urinary calculi is increasing globally due to sedentary lifestyle, unhealthy dietary habits, psychological stress, and environmental factors. *Mutrashmari* (urolithiasis) results in obstruction of urine flow, dysuria, and may further lead to serious complications such as hydronephrosis and irreversible renal parenchymal damage if not managed timely. In Ayurveda, its management primarily focuses on drugs possessing *Mutravirechaniya* (diuretic), *Ashmarighna* (lithotriptic), and *Shophaghna* (anti-inflammatory) properties, which help in relieving symptoms, promoting dissolution or expulsion of calculi, and preventing recurrence.

KEYWORDS: Ashmari, Mutrashmari, Ashta Mahagada, Mutravaha Srotas, Mutravirechaniya, Ashmarighna, Shophaghna, Urolithiasis.**INTRODUCTION**

Ashmari is a term derived from two Sanskrit roots, “Ashma” meaning stone or gravel and “Ari” meaning enemy, reflecting a condition that produces severe pain and morbidity comparable to that caused by an adversary. This disease has been elaborately described by Acharya Sushruta, who categorized it under *Ashta Mahagada*, the group of eight most serious and difficult-to-manage disorders. The condition known as *Mutrashmari* specifically refers to calculi formation within the *Mutravaha Srotas*, with the urinary bladder (*Basti*) identified as the primary site of pathology. In Ayurvedic literature, Acharya Charaka has described *Basti* as one of the *Dashavidha Pranayatana* (ten vital life centers), while Acharya Sushruta has classified it as *Sadhyapranahara Marma*, indicating that injury to this region may result in life-threatening consequences.

Although Ashmari is mainly associated with the bladder, classical references in the *Sushruta Samhita* indicate its strong correlation with vesical calculi. Nevertheless,

stone formation may occur anywhere along the urinary tract, even though detailed separate descriptions of extra-vesical calculi are not extensively provided in Ayurvedic texts. Hence, the term *Basti* is often interpreted in a broader sense as encompassing the urinary system as a whole.

The prevalence of *Mutrashmari* (urolithiasis) is steadily increasing worldwide due to dietary irregularities, sedentary lifestyle, psychological stress, and environmental influences. The condition disrupts normal urine formation and excretion and is characterized by a high rate of recurrence and complications. Obstruction of the urinary tract by calculi can lead to hydronephrosis and progressive renal parenchymal damage, which may eventually result in renal failure if not managed appropriately.

DISCUSSION

The kidneys are vital paired organs with a bean-like shape that play a key role in maintaining the body's fluid and electrolyte balance by filtering waste products from

the bloodstream and excreting them in urine. Under normal conditions, urine contains dissolved salts and minerals in appropriate concentrations; however, when their levels become excessively high, crystallization occurs, initiating the formation of renal calculi. These stones may remain small or gradually enlarge over time, sometimes occupying significant portions of the renal collecting system. While some calculi remain asymptomatic within the kidney, others may dislodge and migrate into the ureter.

During their passage, stones may either descend into the urinary bladder and be expelled naturally through urine or become impacted in the ureter. Ureteral obstruction leads to impaired urine flow from the affected kidney and is typically associated with acute pain and possible complications if not relieved promptly.

Renal calculi are classified according to their chemical composition into four major types: calcium-based stones, which are the most prevalent and account for approximately 80% of cases (including calcium oxalate and calcium phosphate); uric acid stones, representing about 5–10%; struvite or infection-related stones, accounting for around 10%; and cystine stones, which are rare and constitute less than 1% of all cases.

The development of renal calculi is a complex process influenced by multiple factors including lifestyle, diet, metabolic disorders, and genetic predisposition. A major contributing factor is decreased urine output, which commonly occurs due to dehydration from intense physical activity, prolonged exposure to hot environments, or inadequate fluid intake. Dietary imbalances, particularly high intake of oxalate-rich foods, excessive animal protein, and increased calcium consumption, further enhance the risk of stone formation. Obesity is also associated with altered urinary pH and metabolic changes that favor crystallization.

Endocrine disorders such as hyperparathyroidism, renal tubular acidosis, and inherited metabolic conditions like cystinuria and primary hyperoxaluria significantly increase susceptibility. In addition, prolonged use of supplements such as calcium and vitamin C, along with a positive family history, are recognized predisposing factors.

Clinically, renal stones typically manifest as sudden onset of severe, colicky pain in the lumbar or flank region, often radiating toward the lower abdomen or groin. The pain is intermittent in nature and may be accompanied by urinary urgency, burning sensation during micturition, hematuria presenting as dark or reddish urine, and gastrointestinal symptoms such as nausea and vomiting.

In Ayurvedic science, urine formation (*Mutra Nirmana*) is described as the metabolic waste derived from ingested food (*Ahara*) along with fecal matter (*Purisha*). According to Acharya Sushruta, urine is carried to the

urinary bladder (*Basti*) through two *Adhogami Dhamanis*, hence termed *Mutravaha Dhamanis*. The formation of *Mutrashmari* is attributed to improper dietary and lifestyle practices (*Apathya Sevana*), including overeating before digestion of previous meals (*Adhyashana*), excessive intake of cold, heavy, oily, and sweet foods, daytime sleep (*Divaswapna*), and absence of detoxification therapies (*Samshodhana*). These factors lead to aggravation of *Doshas*, involvement of *Dushyas*, and obstruction of *Srotas*, ultimately resulting in disease manifestation.

The classical Ayurvedic texts describe the pathogenesis of Ashmari using natural analogies, such as sediment deposition in stagnant water and hailstone formation in the atmosphere.

Similarly, aggravated *Pitta* in the urinary bladder, combined with *Vayu* and *Kapha*, leads to stone formation. Acharya Charaka further compares the process to the formation of *Gorochana* from cow bile.

Early detection is emphasized in Ayurveda through *Purvarupa* (prodromal symptoms), which include fever, lower abdominal discomfort, radiating pain to genital regions, dysuria, anorexia, and foul-smelling urine. The fully developed clinical picture (*Rupa*) includes severe abdominal and genital pain, urinary obstruction, hematuria, cloudy urine containing gravel, and pain aggravated by physical activities such as walking, running, swimming, or riding.

The Ayurvedic management of *Mutrashmari* involves drugs with *Mutravirechaniya* (diuretic), *Ashmarighna* (lithotriptic), and *Shophaghna* (anti-inflammatory) actions. These help in relieving symptoms, facilitating stone expulsion, and preventing recurrence.

Commonly used herbs include

1. *Pashanbheda*
2. *Varuna*
3. *Kulattha*
4. *Gorakshganja*
5. *Punarnava*
6. *Gokshura*
7. *Virataru*

Pashanbheda

Bergenia ligulata, belonging to the family Saxifragaceae, is a perennial medicinal herb recognized in Ayurveda for its strong lithotriptic properties. The plant is characterized by thick, fleshy rhizomatous rootstocks and is commonly found in the temperate Himalayan regions at elevations ranging from 900 to 3000 meters.

Pharmacodynamic Profile

Pashanbheda possesses a distinct combination of Ayurvedic properties that contribute to its therapeutic effects:

- **Rasa:** Kashaya (astringent) and Tikta (bitter)
- **Guna:** Laghu (light), Tikshna (penetrating), and Snigdha (unctuous)
- **Veerya:** Shita (cold potency)
- **Vipaka:** Katu (pungent post-digestive effect)
- **Prabhava:** Ashmari-bhedana, indicating a specific action in breaking urinary calculi

Dosha Action

It exhibits a balancing effect on all three doshas, hence classified as Tridosha-shamaka.

Part Used

The rhizome is the primary medicinal part utilized for therapeutic purposes.

Phytochemical Constituents

The plant contains several bioactive compounds, including bergenin, β -sitosterol, and catechin-3-gallate, which are believed to contribute to its medicinal efficacy.

Classical Therapeutic Indications

In classical Ayurvedic texts such as *Sushruta Samhita* (Uttara Tantra 58), Pashanbheda is recommended in the management of urinary disorders like Ashmari (urinary calculi) and Mutrakriccha (dysuria). It is traditionally used in combination with herbs such as Nala, Darbha, Ikshu, Trapusa, and Ervaru beeja. These are boiled in milk and administered with honey, forming a therapeutic formulation aimed at facilitating stone dissolution and easing urinary flow.

Mechanism of Action

The therapeutic efficacy of *Bergenia ligulata* is mainly attributed to its bioactive constituents present in the rhizome, which act through multiple pharmacological pathways relevant to urinary stone disorders.

The compound *bergenin*, a major phytochemical of the rhizome, plays a significant role in preventing urolithiasis. It inhibits the aggregation of calcium oxalate crystals, thereby reducing stone formation. In addition, *bergenin* exhibits strong antioxidant activity by scavenging free radicals and inhibiting lipid peroxidation, which helps protect renal tissues from oxidative stress-induced damage. Due to these combined effects, the plant is widely recognized for its anti-urolithiatic potential.

Another important constituent, *paashanolactone*, isolated from the rhizomes, demonstrates notable anti-inflammatory activity. This contributes to the reduction of inflammation in the urinary tract, which is commonly associated with stone-related irritation and obstruction.

Overall, *Pashanbheda* exerts its therapeutic effect in renal calculi primarily through diuretic, anti-inflammatory, antioxidant, and lithotriptic actions, thereby facilitating the prevention and management of kidney stones.

Varuna

Botanical name: *Crataeva nurvala* Buch.-Ham.

Family: Capparidaceae

Habit: It is a deciduous, medium-sized tree that attains a height of approximately 50 feet.

Habitat: The plant is commonly distributed in the southern Himalayan regions and is native to Karnataka, Kerala, and Tamil Nadu.

Pharmacodynamic Properties

The drug exhibits *Tikta* and *Kashaya* rasa, with *Laghu* and *Ruksha* guna. It is *Ushna* in *veerya* and undergoes *Katu vipaka*. Its unique therapeutic action is described as *Ashmari-bhedana*, indicating its stone-dissolving property.

Dosha Karma: It pacifies *Kapha* and *Vata* doshas while having a *Pitta vardhaka* effect.

Part Used: Root bark and stem bark

Chemical Constituents: The plant contains several bioactive compounds such as lupeol, rutin, varunol, quercetin, and β -sitosterol.

Traditional Therapeutic Applications

Classical Ayurvedic texts describe *Varuna* as an important drug in the management of *Ashmari*. It is included in formulations like *Vatika Ashmari-hara ghrta* and *Kaphaja Ashmari-hara yogas* (*Sushruta Samhita*, Chikitsa Sthana 7/6, 14). Additionally, both root and stem bark are used in the form of decoctions and pastes for the treatment of urinary calculi, as mentioned in *Vrinda Madhava*.

Mechanism of Action

The therapeutic effect of *Varuna* is largely attributed to lupeol, which inhibits the enzyme glycolic acid oxidase in the liver, thereby reducing the formation of oxalate. This helps prevent deposition of calcium oxalate crystals in the kidneys.

As a result, it is beneficial in conditions such as *hyperoxaluria*, *hypercalciuria*, and *hypercrystalluria*. Furthermore, lupeol demonstrates anti-inflammatory, analgesic, and antipyretic activities, supporting its role in reducing renal inflammation and pain.

Overall, *Varuna* acts as a lithotriptic and anti-inflammatory agent, making it highly effective in the management of urinary calculi (*Ashmari*).

Kulattha

Botanical name: *Dolichos biflorus* Linn.

Family: Fabaceae

Habit: It is a slender, trailing to sub-erect, much-branched annual herb.

Habitat: The plant is indigenous to India and is commonly found at elevations up to 1000 meters.

Pharmacodynamic Properties

Kulttha is characterized by *Kashaya* rasa with *Laghu*, *Ruksha*, and *Tikshna* gunas. It possesses *Ushna veerya* and undergoes *Amla vipaka*. The drug is specifically known for its *Ashmari-bhedana* (stone-breaking) action.

Dosha Karma: It pacifies *Kapha* and *Vata doshas* while aggravating *Rakta-Pitta*. **Part Used:** Seeds

Chemical Constituents: The seeds contain bioactive compounds such as genistein, dalbergioidin, phaseollidin, quercetin, and tannins.

Classical Therapeutic Applications

According to *Bhavaprakasha*, formulations like *Kultthadi ghrta* are recommended in the management of urinary calculi (*Ashmari*), highlighting its traditional importance in urolithiasis therapy.

Mechanism of Action

The anti-urolithiatic activity of *Kulttha* is mainly attributed to its flavonoids and tannins. These compounds help relax the smooth muscles of the urinary tract, thereby promoting the expulsion of renal stones.

Quercetin, an important constituent, exhibits angiotensin-converting enzyme (ACE) inhibitory activity, which contributes to reduced calcium oxalate crystal deposition and decreased renal inflammation. This has been supported by experimental findings (Toblli et al., 2001).

In addition, quercetin reduces lipid peroxidation and enhances endogenous antioxidant defense systems, thereby protecting renal tissues from oxidative damage.

Overall, *Kulttha* acts as a potent anti-urolithiatic agent through its combined antioxidant, anti-inflammatory, and spasmolytic actions, making it beneficial in the management of *Ashmari*.

Gorakshganja

Botanical name: *Aerva lanata* Juss.

Family: Amaranthaceae

Habit: It is a semi-erect, much-branched under-shrub, attaining a height of up to 50 cm.

Habitat: This species is widely distributed across India, found in plains and extending up to 1000 meters in hilly regions. It is also reported in Sri Lanka, Arabia, tropical Africa, Java, and the Philippines.

Pharmacodynamic Properties

Gorakshganja is attributed with *Tikta* and *Kashaya* rasa, along with *Laghu* and *Tikshna* gunas. It has *Ushna veerya* and undergoes *Katu vipaka*. Its classical action is described as *Ashmari-bhedana*.

Dosha Karma: It pacifies *Kapha* and *Vata doshas*.

Part Used: Root

Chemical Constituents: The plant contains palmitic acid, β -sitosterol, and α -amyrin.

Mechanism of Action

The anti-urolithiatic activity of *Aerva lanata* is primarily due to its bioactive constituents such as quercetin and

betulin. These compounds inhibit oxalate formation by suppressing oxalate oxidase enzyme activity, which is involved in stone formation.

Furthermore, they enhance urinary magnesium levels, which reduces oxalate absorption and its supersaturation in urine, thereby lowering the risk of calcium oxalate crystal formation.

In addition, these phytoconstituents exert a mild diuretic effect, increasing urine output and assisting in the expulsion of urinary calculi.

Overall, *Gorakshganja* acts as a potent anti-urolithiatic and diuretic herb, making it useful in the management of renal stones (*Ashmari*).

Punarnava

Botanical name: *Boerhavia diffusa* Linn.

Family: Nyctaginaceae

Habit: It is a creeping, perennial, and extensively branched herb with stout, fusiform roots.

Habitat: The plant is native to India and is commonly found in the Himalayan regions up to an altitude of around 2000 meters, particularly in temperate zones.

Pharmacodynamic Properties

Punarnava is characterized by *Madhura*, *Tikta*, and *Kashaya* rasa, with *Laghu* and *Ruksha* guna. It possesses *Ushna veerya* and undergoes *Madhura vipaka*. It is considered *Tridosahara* in action.

Part Used: Root

Chemical Constituents: Punarnavoside, boerhavin, quercetin, eupalitin, and punarnavine.

Classical Therapeutic Applications

As described in *Sushruta Samhita* (*Chikitsa Sthana* 7/26), milk processed with *Haritakyadi* (Triphala) or *Punarnava* is advised for the management of urinary calculi (*Ashmari*).

Similarly, *Bhavaprakasha* (*Chikitsa* 37/95–99) mentions the use of *Punarnavadya Taila* in the treatment of stone disorders.

Mechanism of Action

The therapeutic effect of *Punarnava* in urolithiasis is primarily due to punarnavine, which exhibits a potent diuretic action. Increased urine flow helps reduce the supersaturation of oxalate, thereby preventing the crystallization and deposition of calcium oxalate stones. This enhanced diuresis also facilitates the mechanical clearance of renal calculi.

In addition, eupalitin present in *Boerhavia diffusa* demonstrates NF- κ B inhibitory activity, leading to reduced phospholipase A activity and decreased formation of reactive oxygen species. This contributes to its antioxidant effect and protects renal tissues from oxidative injury.

Overall, *Punarnava* exerts anti-urolithiatic activity through combined diuretic, antioxidant, and anti-inflammatory mechanisms, making it beneficial in the management of *Ashmari*.

Gokshura

Botanical name: *Tribulus terrestris* Linn.

Family: Zygophyllaceae

Habit: It is a low-growing, prostrate shrub with a spreading growth habit.

Habitat: This plant is commonly distributed across the sub-tropical regions of India and often grows as a weed in open fields, roadsides, and wastelands, reaching up to 1000 meters altitude.

Pharmacodynamic Properties

Gokshura is characterized by *Madhura rasa* along with *Guru* and *Snigdha guna*. It possesses *Sheeta veerya* and undergoes **Madhura vipaka*. It is known to balance *Vata* and *Pitta doshas*.

Part Used: Fruits and roots

Chemical Constituents: Harman, harmine, quercetin, and kaempferol.

Classical Therapeutic Applications

According to *Charaka Samhita (Chikitsa Sthana 26/74)*, ghrta prepared with *Gokshura* decoction and milk is recommended in urinary disorders.

Another classical formulation describes a combination of *Gokshura*, *Kokilaksha*, *Eranda*, and two varieties of *Brihati*, processed with milk and sour curd for one week, which is indicated for the management of urinary calculi (*Charaka Samhita Chikitsa Sthana 26/62*).

In *Sushruta Samhita*, powdered seeds of *Gokshura* mixed with honey and administered with sheep milk for seven days are described as helpful in breaking urinary stones.

Mechanism of Action

The anti-urolithiatic activity of *Tribulus terrestris* is mainly due to its flavonoid constituents such as quercetin and kaempferol, which inhibit glycolate oxidase (GOX), a key enzyme involved in oxalate synthesis. This inhibition reduces oxalate production and thereby decreases the risk of calcium oxalate stone formation.

In addition, *Gokshura* exhibits a diuretic effect, increasing urine output and facilitating the mechanical removal of renal calculi. Its antioxidant action further helps in protecting renal tissues from oxidative damage and inflammation.

Virataaru

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

Family: Mimosaceae

Habit: It is a perennial, thorny shrub or small tree showing considerable morphological variability.

Habitat: The plant is widely distributed across seasonally

dry tropical regions of Africa, Asia, and Australia. In India, it is commonly found in dry deciduous forest zones.

Pharmacodynamic Properties

Virataaru is characterized by *Tikta* and *Kashaya rasa*, with *Laghu* and *Ruksha guna*. It possesses *Ushna veerya* and undergoes *Katu vipaka*. It is traditionally known to pacify *Kapha* and *Vata doshas*.

Part Used: Root

Chemical Constituents: β -amyirin, friedelin, β -sitosterol, anthocyanins, betacyanins, coumarins, terpenes, and cardiotonic heterosides.

Mechanism of Action

Experimental studies on *Virataaru kwatha* have shown a marked, dose-dependent increase in urine output. This diuretic effect is attributed to the combined activity of its phytochemical constituents.

The increased urinary flow assists in flushing out renal calculi and helps reduce the likelihood of stone formation by lowering urinary stasis and supersaturation.

Overall, *Virataaru* exhibits significant anti-urolithiatic potential primarily through its diuretic action, supporting its traditional use in the management of *Ashmari*.

CONCLUSION

The prevalence of *Mutrashmari* (urolithiasis) is increasing rapidly, largely due to unhealthy dietary habits, sedentary lifestyle, psychological stress, and environmental factors. This condition adversely affects urinary formation and excretion, often leading to painful and recurrent urinary disturbances.

While several modern treatment options are available, they are often expensive and do not fully prevent recurrence of stone formation.

In Ayurveda, the management of *Mutrashmari* is based on a holistic approach involving three main categories of drugs: *Mutravirechaniya* (diuretics), *Ashmarighna* (lithotriptic agents), and *Shophaghna* (anti-inflammatory drugs). These therapeutic principles help in relieving symptoms, facilitating stone expulsion, and reducing the chances of recurrence.

Overall, Ayurvedic medicines demonstrate anti-urolithiatic potential through multiple mechanisms such as diuretic, anti-inflammatory, and analgesic actions. They also support renal function and play a significant role in preventing the formation and recurrence of urinary stones.

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