



Research Article

MANAGEMENT OF URINARY CALCULUS WITH HERBAL PREPARATION (*MORINGA OLEIFERA* AND *TRIBULUS TERRESTRIS*)

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KEYWORDS: Urolithiasis, *Ashtamahagada*, *Moringa oleifera* and *Tribulus terrestris*.

ABSTRACT

Urinary stones are a common disease that remains a significant health problem. It carries significant morbidity and imposes tremendous financial burden on healthcare system. Urolithiasis affects up to 5% of the population, with a recurrence rate of 50 to 80%. Males are more frequently affected than the females. Management includes both medicinal and surgical treatment which depends on size, type and location of stone. Larger stones which fail to pass through urinary system, needs treated by surgical interventional such as Extracorporeal shock wave lithotripsy (ESWL), Ureteroscopy, and Percutaneous Nephrolithotomy etc. For prevention and recurrence of stone, many herbal medicines have been used traditionally which are believed to cause the disintegration, dissolution and dislodgement and expulsion of urinary stones. In Ayurveda, there are references and comprehensive description of various herbal drugs regarding their anti-lithaitic properties. Role of *Moringa oleifera* (*Shigru mool*) and *Tribulus terrestris* (*Gokshura phala*) has been highly mentioned. In the present study, a total of 30 patients of Urolithiasis (*Mutrashmari*) with stone size up to 12mm were selected and all patients were randomly assigned to receive the designed herbal treatment i.e., decoction of *Moringa oleifera* and *Tribulus terrestris* for a maximum of 60 days. The study concluded that the herbal formulation is found significant in improving the symptoms of Urolithiasis in all patients and stones in 11 patients were also expelled out.

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INTRODUCTION

Mutrashmari is one of the most important diseases of *Mutravahasrotas* where both medicinal and surgical treatments are advised. Acharya Sushruta, "The Father of Surgery" explained urinary calculus under the heading of *Ashmari* in details. *Mutrashmari* is most common disease of urinary system and is considered as one among the *Ashtamahagadas*^[1] where both medicinal and surgical interventions are required. Acharya Sushruta^[2] has mentioned the complete description of the disease including its management and complications in a most scientific manner. As surgical modalities have certain limitations, risk, complications and high recurrence rate, various drugs are in a trial to prove their efficacy. In Ayurveda, there are references and comprehensive description of various herbal drugs regarding their

anti-lithaitic properties. Role of *Moringa oleifera* (*Shigru mool*)^[3,4] and *Tribulus terrestris* (*Gokshura phala*)^[5] were highly mentioned and hence selected for study.

Drug Contribute

Shigru

Moringa oleifera (Moringaceae) is one of the renowned medicinal plants used to treat large number of human ailments as mentioned in Ayurveda. Besides a number of properties, *Moringa oleifera* roots^[6] are found to be with anti-inflammatory and diuretic effects. Plant is indigenous in sub-Himalayan tract and is commonly cultivated throughout the country. There are two kinds of *Shigru* in classical texts of medicine on the basis of flower color viz., white and Red, which are bitter and

sweet in tastes and they are specifically known as *Katushigru* and *Madhushigru* respectively. *Katushigru* botanically identified as *Moringa oleifera* and it occurs almost throughout the country and available commonly. The alcoholic extract of seeds of *Shiguru* was found to be a potent analgesic when study was carried out in albino rats. The methanolic extract of the root produced analgesia in mice and also potentiated the analgesic action morphine and pethidine. The roots and ethanol extract of the leaves showed antispasmodic action, possibly through calcium channel blockade. The administration of aqueous and alcoholic extract of root-wood significantly reduced the elevated urinary oxalate showing a regulatory action on endogenous oxalate synthesis and also lowered the increased deposition of stone forming constituents significantly in the kidneys of calculogenic rats.

Properties and Actions Mentioned in Ayurveda

Rasa: Katu (Kshariya), Tikta

Guna: Laghu, Ruksha, Tikshna

Virya: Ushna

Vipaka- Katu

Karma: Kaphavatashamaka, Svedopaga, Krimighna, Shirovirechanopaga, Katukaskandha, Haritakavarga (Charak Samhita)^[7-10].

Varunadi, Sirovirechana (Sushruta Samhita)^[11]

Gokshura

Tribulus terrestris (Zygophyllaceae) is commonly known as puncture vine, caltrop, yellow vine, goat head and devil's horn. It is having a high-value medicinal property and is widely distributed in both tropical and mild temperate regions. Medicinal usage has been reported in traditional systems of medicine wherein the plant is frequently preferred in the treatment of urinary disorders that reoccur owing to development of antibiotic resistance by the infecting organism. It is known to relieve, prevent, and promote the discharge of urinary stones. It has also been used in the treatment of prostate enlargement and bladder sensitivity. The diuretic properties of *Tribulus terrestris*^[12] are due to large quantities of nitrates and essential oil present in its fruits and seeds. The diuretic activity can also be attributed to the presence of potassium salts in high concentration. Its decoction has a potential to inhibit nucleation and growth of the calcium oxalate crystals and significantly prevented the deposition of calcium-oxalate in the kidneys by inhibiting the glycolic acid oxidase (GAO) and lactate dehydrogenase (LDH) enzyme activity in liver which are the major oxalate synthesizing enzymes.

Properties and Actions Mentioned in Ayurveda

Rasa: Madhura

Guna: Guru, Snigdha

Veerya: Sheeta

Vipaka: Madhura

Karma: Vatanut, Brihana, Vrishya, Ashmarihara, Vastishodhana^[13]

Preparation of Decoction

The dried form of the two crude drugs i.e., *Moringa oleifera* root and *Tribulus terrestris* fruit were taken and grinded into small fragments. Then 12.5g of both the grinded material was taken (total = 25g) and put in a container containing 200 ml of water. The container was left for boiling until the water content evaporated and remained one-fourth i.e., 50ml. The solution was filtered and allowed to cool at room temperature. The decoction was ready for oral administration.

Clinical Study

From August 2014 to March 2016, patients having signs and symptoms of *Mutrashmari* (Urolithiasis) were selected irrespective of sex, religion, occupation from OPD/IPD of Shalya Tantra department, Jammu institute of Ayurveda and Research, Jammu. The patients were screened on clinical grounds and routine laboratory investigations to establish the nature of urinary problems.

Sample size= 30 patients

Inclusion Criteria

- Age between 15 to 60 years.
- Patients of either sex are taken.
- Patients with kidney or ureteric stone with size upto 12 mm
- Consent to participate for study.

Exclusion Criteria

- Stone size more than 12 mm with severe haematuria and renal failure were excluded from the study.
- Patients of carcinoma, Tuberculosis and HIV positive cases were excluded from study.

Laboratory Investigation

Hemogram, FBS, Urea, Creatinine, uric acid, Calcium, Phosphorous, sodium, potassium etc. Urine examination: Routine & Microscopic, Plain X-ray abdomen and USG for Kidney, Ureter and Bladder (KUB) region. All the above mentioned investigations were carried out before and after treatment.

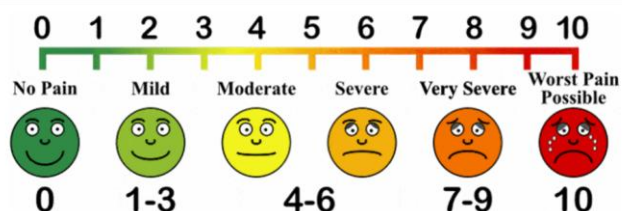
Drug Schedule

40ml of decoction with equal amount of water thrice a day was given for 60 days. Patient is also advised to have orally fluids in plenty.

Criteria of Assessment

Gradations of symptoms were done and assessed before and after treatment.

Pain Abdomen: Pain was assessed by Visual Analogue Scale.



Grade 0 (No pain - 0 on scale) Absence of pain abdomen.

Grade 1 (Mild - 1 to 3) Pain which does not interfere in day to day activity.

Grade 2 (Moderate - 4 to 6) Pain which interfere with function but subsides by simple analgesic.

Grade 3 (Severe - 7 to 10) Pain which demands immediate attention and manipulation.

Haematuria

Grade 0 - Absence of RBCs in urine.

Grade 1- Presence of 1-5 RBCs HPF in the urine.

Grade 2 - Presence of 6-10 RBCs HPF in the urine

OBSERVATION AND RESULTS

Grade 3 - Presence of >10 RBCs HPF in the urine

Dysuria

Grade 0 - Absence of pain during voiding

Grade 1 - Mild pain during voiding

Grade 2 - Moderate pain during voiding

Grade 3 - Severe pain during voiding

Burning Micturition

Grade 0- No Burning

Grade 1- Burning at initial stage

Grade 2- Burning before and during micturition

Grade 3- Before, during and after micturition

Turbidity

Grade 0- Cristal clear urine

Grade 1- Faintly cloudy/smoky, but paper prints easily read through tube

Grade 2- Paper prints not easily read through tube

Grade 3- Paper prints cannot seen through tube

Assessment for Size of stone, Site of stone and Dislodgement was done by Ultrasonography.

Follow up: At the end of every week of treatment.

Criteria for assessment of total effect of therapy

Complete relief- 75%-100% relief

Markedly Relief- 50%-75% relief

Mild Relief - 25%-50% relief

Unchanged - <25% relief

Table 1: Effect of Herbal Preparation on Symptoms

Chief Complaints	Mean		Diff.	% relief	P
	BT	AT			
Vedanaa (Pain)	3.02	0.98	2.04	67.54%	<0.0001
Mootradhara Sanga (Dysuria)	1.09	0.20	0.89	81.65%	<0.0001
Sarudhira Mootrataa (Haematuria)	0.68	0.11	0.57	83.82%	< 0.001
Ati Aavila Mootrataa (Turbid urine)	0.88	0.16	0.72	81.81%	< 0.001
Burning Micturition (Mootradaha)	2.04	0.44	1.6	78.43%	< 0.001

Table 2: Effect of Herbal Preparation on Size of Stones

Effect on stone	1-6mm	6-12mm	Total	Percentage
Expelled	07	04	11	36.66%
Decrease	03	05	08	26.66%
No change	02	08	10	33.33%
Increase	0	01	01	3.33%
Total	12	18	30	100%

In present study, all patients were treated with decoction of *Moringa oleifera* and *Tribulus terrestris* and were advised to take similar dietary regimen and clinical assessment was done on every 15th day interval. The initial findings through clinical, pathological and radiological statements were compared with the result of progressive 15th day, 30th day, 45th day and 60th day. Finally the assessment as a whole was presented in percent value. 't' test was used for the purpose of the test of significance of herbal preparation and was assessed through p-value. Out of 30 total patients of Urolithiasis, 12 stones of 1-6mm size were found, out of which 7 were expelled out, 3 were decreased in size, no change in size was observed in 2 patients whereas none was reported with increase in size. Total 18 stones of 6-12mm size were found, out of which 4 stones were expelled out, 5 stones were decreased in size, no change was observed in 8 stones whereas only 1 stone was increased in size. Among total 30 patients. 36.66% stones were expelled out, 26.66% stones were found with decreased in size and no change was observed in 33.33% stones whereas increase in stone size was observed in only 3.33% of patients. Statistically highly significant results were observed in pain (*Vedanaa*), dysuria (*Mutraddhaaraa Sanga*) and burning micturition (*Mutraddaha*). Statistically significant results were observed in haematuria (*Sarudhira Mootrataa*) and turbid urine (*Ati Aavila Mutrataa*).

DISCUSSION

Tribulus terrestris is having diuretic, anti-inflammatory, anti-oxaluric and anti-calciuric effects in rats against hydroxyproline induced hyperoxaluria. It significantly prevented the deposition of calcium-oxalate in the kidneys by inhibiting the glycolic acid oxidase (GAO) and lactate dehydrogenase (LDH) enzyme activity in liver which are the major oxalate synthesizing enzymes. *Moringa oleifera* possesses diuretic, anti-inflammatory, and anti-spasmodic properties. Due to the combination of these two activities, the herbal preparation is regarded therapeutically as highly efficacious for Urolithiasis. So the herbal preparation is a combination of anti-oxaluric, anti-calciuric, anti-inflammatory, anti-spasmodic and diuretic properties which probably helped by avoiding further deposition of calcium and oxalates on the stone, loosening and breaking of molecular bonds of the stone, decreasing the local inflammation where the stone is lodged due to anti-inflammatory effect and may flush it out due to diuretic effect.

Limitations of the Study

- Patient found it difficult to filter the urine especially when he/she was out of his/her place.

- In spite of proper instructions to the patients, the size of some expelled stones was not measured and analyzed as some of them were not able to collect them.
- Some of the patients reported that the herbal preparation was having a quite bitter taste.

CONCLUSION

The herbal medicines are the heritage of our ancient civilization and are still the mainstay for primary health care especially in the developing countries because of better acceptability, compatibility with the human body and lesser side effects. Urolithiasis is a common trouble effecting people all around the world and this product may come out as a potent medicine for the management and prevention of recurrent Urolithiasis. Patients responded well to the herbal preparation and showed symptomatic relief. There are statistically significant results in terms of stone-free rate.

REFERENCES

1. Sharma PV, editor. Ashmari chikitsa adhyaya. shaloka 3. In: Sushruta, Sushruta Samhita, Chikitsa sthana. Varanasi, India: Chaukhambha Surbharati Prakashan; 2013. p. 234.
2. Sushruta Samhita, edition reprint 2007, Hindi vyakhya by Kaviraj Dr Ambikadutt shashtri, Choukhambha Sanskrit sansthana, Varanasi, chikitsa sthana, 7th chapter, shaloka no. 6, 11 and 14, p. 41.
3. Sharma Anant Ram. Sushruta Samhita. Vol.1. Sutrasthana. Chapter 38/12-38. Varanasi. Chaukhambha Surbharati Prakashan. Edition; 2004. pp 296-300.
4. Agnivesa revised by Charaka & Dridhabala, 2006. Charaka Samhita. Ed. Vidyadhar Shukla, Prof. Ravidatta Tripathi, Vol I, II. Revised ed. Delhi: Chaukhambha Sanskrit Pratisthan, Chapter 26, shaloka 66-67.
5. Tripathi Brahmanand. Charak Samhita. Vol.1. Sutrasthana. Chapter 4/35. Varanasi. Chaukhambha Surbharti Prakashan. Edition; 2012. pp 89.
6. Pandey A, Pandey RD, Tripathi P, Gupta PP, Haider J, et al. Moringa Oleifera Lam. (Sahijan) - A Plant with a Plethora of Diverse Therapeutic Benefits: An Updated Retrospection. Med Aromat Plants.2012; 1(1):1-8.
7. Sashtri Kashinath and Chaturvedi Gorakhnath Vidyotini Hindi Commentary on Charak Samhita of Agnivesh, Part 1, Chaukhambha Bharti Academy Varanasi, 2009, Sutra Sthana, 4.15: 82.
8. Sashtri Kashinath and Chaturvedi Gorakhnath Vidyotini Hindi Commentary on Charak Samhita of Agnivesh, Part 1, Chaukhambha Bharti

- Academy Varanasi, Sutra Sthana, 2009; 4.27: 86.
9. Sashtri Kashinath and Chaturvedi Gorakhnath Vidyotini Hindi Commentary on Charak Samhita of Agnivesh, Part 1, Chaukhambha Bharti Academy Varanasi, Sutra Sthana, 2009; 27.170: 545.
10. Sashtri Kashinath and Chaturvedi Gorakhnath Vidyotini Hindi Commentary on Charak Samhita of Agnivesh, Part 1, Chaukhambha Bharti Academy Varanasi, 2009, Vimana Sthana 8.142, 791.
11. Shashtri kaviraj ambikadatta, Ayurved tatva sandipika on Sushruta Samhita, Part 1, Chaukhambha Bharti Academy, 2011; Sutra Sthan 38.9, 183.
12. Anand R, Patnaik GK, Srivastava S, Kulshrestha DK, Dhawan BN. Evaluation of antiurolithiatic activity of Tribulus terrestris. International journal of pharmacognosy.1994; 32(3):217-224.
13. Dravyaguna- Vijnana, Vol.II, Vegetable Drugs, by Prof. P.V.Sharma, Reprint: 2006, Chaukhambha Bharati Academy, Varanasi, page 233-234.

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Fig. 1: Gokshur



Fig.2: Shigru