



Int J Ayu Pharm Chem
www.ijapc.com
e ISSN - 2350-0204
Volume 8 Issue 3
5/10/2018

Greentree Group Publishers





Clinical Evaluation of the Efficacy of *Laghu Varunadi Kwath* in *Mutrashmari* (Urolithiasis)

Vinay Bhardwaj^{1*}, Niharika Sharma² and Ajay Nagar³

¹Deptt. of Kriya-Sharir, Govt. Ayurvedic College, Raipur, Chhattisgarh, India

ABSTRACT

Mutrashmari (Urolithiasis) is a disorder of *Mutravaha Srotas* (urinary system). *Mutrashmari* is *Apravrittijanya* disease caused due to vitiation of *Mutravaha Srotasa*. The predominant Dosha in *Ashmari* is *Kapha*. So increased *Kapha* may cause *Ashmari* formation. Vitiating *Kapha* due to *Nidana Sevana*, mixes with *Mutra*, enters with urine in urinary system and precipitate to form *Ashmari*. A clinical trial was done on randomly selected patients of *Mutrashmari* with *Laghu Varunadi Kwatha*, described by *Pandit Rajeshwar Dutta Shastri Vaidya* in *Ashmari Prakaran* of *Chikitsadarsha*. Tab Cystone was taken as standard to compare the efficacy of *Laghu Varunadi Kwath* in the management of *Mutrashmari* (Urolithiasis). All 30 registered patients of *Mutrashmari* were randomly divided into two groups. Fifteen patients were administered with Tab. Cystone (2 Tabs BD) and another 15 patients with *Laghu Varunadi Kwath* (80 ml BD) for 45 days. On comparison of efficacy of *Laghu Varunadi Kwath* and Tab. Cystone, *Laghu Varunadi Kwath* seems to be more effective in the management of *Mutrashmari*. *Laghu Varunadi Kwath* possess the ideal properties of disintegration and expulsion of urinary stones and it help to reduce sign and symptoms of *Mutrashmari* (Urolithiasis).

KEYWORDS

Mutrashmari, *Kapha Dosha*, *Laghu Varunadi Kwath*, *Tab. Cystone*



Greentree Group

Received 01/12/17 Accepted 23/03/18 Published 10/05/18



INTRODUCTION

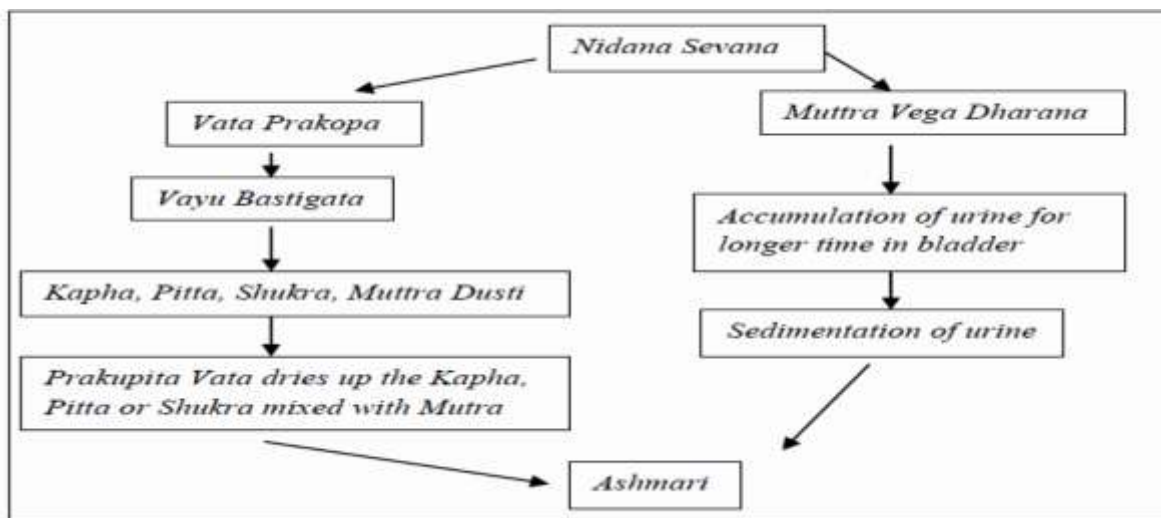
In *Samhita* period, *Sushruta* the father of surgery has explained urinary calculus under the heading of *Ashmari*. Formation of *Ashma* (stone) like substances within the urinary system is called *Ashmari*. In *Ayurvedic* classics, *Mutrashmari* is *Apravrittijanya* disease caused due to vitiation of *Mutravaha Srotasa*. The *Ashmari* is considered as one of the *Mahagada* by *Sushruta*¹ owing to its potentiality to disturb the urinary system.

Kapha is the predominant *Dosha* in *Ashmari* therefore; increased *Kapha* may cause *Ashmari* formation. So excessive intake of *Sheeta*, *Snigdha*, *Guru*, *Madhura Ahara*, *Samashana*, *Adhyashana* (irregular food habits), *Divasvapna* (day sleep) etc. may increase *Kapha* leading to formation of *Ashmari*. Vitiated *Kapha* due to *Nidana Sevana*, mixes with *Mutra*, enters with urine

in urinary system and precipitate to form *Ashmari*². *Vata* and *Pitta* (*vastisthaushma*) concentrate *Kapha* to form *Ashmari*³.

People who are *Asanshodhanasheela* i.e., those who do not undergo *Shodhana* treatment (*Dosha* evacuation measures) and those who are ‘*Apathyakarinah*’ (uses unwholesome items), in them, the *Shleshma Dosha* gets aggravated, which mixes with the urine and saturate it. This saturated urine causes stone formation⁴.

All the *Acharyas* except *Charaka* have classified the disease *Ashmari* into four types -*Shleshmaja*, *Pittaja*, *Vataja*, and *Shukraja*. *Acharya Charaka* has described the *Ashmari* under *Mutrakriccha* and classified on the basis of consistency. He classified *Shukraja*, *Pittaja* and *Kaphaja* varieties as *Mridu Ashmari*, whereas *Vataja* variety of *Ashmari* is included under the *Kathina Ashmari*.





Urolithiasis

Urinary calculus is a stone like body composed of urinary salts bound together by a colloid matrix of organic material. It consists of a nucleus around which concentric layers of urinary salts are deposited. Stone formation requires saturated urine that is dependent upon urinary pH, ionic strength, solute concentration and complexation.

It begins with urine that becomes supersaturated with respect to stone-forming salts, such that dissolved ions or molecules precipitate out of solution and form crystals or nuclei. Once formed, crystals may flow out with the urine or become retained in the kidney at anchoring sites that promote growth and aggregation, ultimately leading to stone formation.

The most common component of urinary calculi is calcium, which is a major constituent in nearly 75% of stones. Calcium oxalate makes up about 60% of all stones; mixed calcium oxalate and hydroxyapatite- 20%; and brushite stones- 2%. Both uric acid and struvite (magnesium ammonium phosphate) stones occur approximately 10% of the time, whereas cystine stones are rare (1%) (Wilson, 1989). Urolithiasis causes pain, loss of working time, medical expenses, needs for hospitalization and an infrequent cause of renal failure. The most important

complication of urolithiasis is urinary obstruction resulting in back pressure, stasis of urine and subsequent damage to the urinary architecture, hydronephrosis, which is often irreversible.

CLINICAL FEATURES

Following are the clinical features of calculi lying in different positions viz.

1) Renal calculi

- Fixed Renal Pain
- Fever
- Hematuria
- Pyuria
- Nausea and vomiting
- Profuse sweating
- Subnormal temperature

2) Ureteric Calculi

- Ureteric colic
- Profuse sweating
- Nausea and vomiting
- High pulse rate
- Subnormal temperature

3) Vesical Calculus

- Frequency
- Pain
- Hematuria
- Dysuria

4) Urethral Calculi

Patient experiences a hindrance and is unable to empty the bladder while urinating. Dribbling, sudden urethral pain, sudden stoppage of stream and few drops of blood stain urine flow occur during



micturition. In case of presence of stone in the posterior urethra, patient feels pain in the perineum or the rectum, or if it is in the anterior urethra, the pain localizes at the site of impaction and may be expelled with increased effort and straining to void. In female having infection of lower urinary tract and calculus in urethral diverticulum shows symptoms like frequent micturition, dysuria, nocturia, pyuria and hematuria.

DRUG REVIEW

Laghu Varunadi Kwatha which is described by *Pandit Rajeshwar Dutta Shastri Vaidya* in *Ashmari Prakaran* of *Chikitsadarsha* was selected for present study.

Composition of “*LaghuVarunadiKwath*”

Kwathdravya -

1. Bark of *Varun*-1 part
 2. Root of *Pashan Bheda*- 1 part
 3. Fruit of *Gokshur*- 1 part
 4. Seed of *Kulattha* - 1 part
- Prakshepa Dravya* - *YavaKshar* – 1 *Masha*

The drug was prepared and issued by *Rashayana Shala*, NIA, Jaipur.

Tab. Cystone (Himalaya Drug Company) –

Tab. Cystone contains extracts of *Shilapushpa*, *Pashanbheda*, *Manjishtha*, *Nagaramusta*, *Apamarga*, *Gojiha*, and *Sahadevi*. Powders of *Hajrulyahood bhasma* & *Shilajeet*. Processed in

Vanatulasi, *Gokshura*, *Lajjalu*, *Kulattha*, *Balam*, *Joratoota*, and *Shaka* seed.

Tab Cystone is taken as standard to compare the efficacy of *Laghu Varunadi Kwath* in the management of *Mutrashmari* (Urolithiasis).

CLINICAL STUDY

To confirm the efficacy of the drug, a clinical study was carried out with “*LaghuVarunadiKwath*” in the management of *Mutrashmari* (Urolithiasis) with following aims and objects:-

AIMS & OBJECTIVES

- i. Conceptual and clinical study of *Mutrashmari* (Urolithiasis).
- ii. To assess the efficacy of “*Laghu Varunadi Kwath*” in the management of *Mutrashmari* (Urolithiasis).
- iii. To compare the efficacy of *Laghu Varunadi Kwath* in the management of *Mutrashmari* with another Ayurvedic Formulation i.e. Tab Cystone.
- iv. To develop easily available and cost effective drug for the management of *Mutrashmari* (Urolithiasis).

MATERIALS & METHODS

Following materials and methods were employed for conducting the present research project-

1) Selection of Patients



The study was conducted on 30 clinically and pathologically diagnosed patients of *Mutrashmari*. The patients were selected randomly from the OPD/IPD of *Arogyashala* and S. S. B. Hospital, National institute of *Ayurveda*, Jaipur, Rajasthan.

Grouping:-All 30 registered patients of *Mutrashmari* (Urolithiasis) were randomly divided into following two groups-

Group A- 15 registered patients of *Mutrashmari* were administered with Tab.Cystone in the dose of 2 tabs twice daily with simple water for 45 days.

Group B- Another 15 registered patients of *Mutrashmari* were administered with *Laghu Varunadi Kwath* in the dose of 80 ml Twice Daily (prepared from 20 gm of *Yavakuta* drug) for 45 days.

2) Inclusion Criterias

- ✓ Age between 20 to 50 years.
- ✓ Clinically diagnosed patients of *Mutrashmari* (Urolithiasis).
- ✓ Site-Patients with Urinary Calculus any where in the Urinary tract i.e. in the Kidney, Ureter, Bladder or Urethra.

- ✓ Size of the Stone less than 10mm.

3) Exclusion Criterias

- ✓ Age below 20 years and more than 50 years.
- ✓ Compromised renal function.
- ✓ Staghorn calculus.
- ✓ Benign Prostatic Hypertrophy.

- ✓ Urinary Stones of 10mm or more than it.

- ✓ Stones in the lower pole of kidney.

- ✓ Patients of *Mutrashmari* (Urolithiasis) with Complications.

PLAN OF WORK -

The study was carried out as follows –

1) Detailed Proforma: A special proforma was prepared to maintain the records of all findings regarding the patients.

2) Investigations:

i) Urine- Routine and Microscopic

ii) Blood- CBC, ESR, RBS, Blood Urea, S.Creatinine, S.Uric acid, S.Calcium, S. Albumin, S. Alkaline Phosphatase, SGOT, SGPT, Bilirubin.

iii) Radiological:-Plain x-ray (K.U.B.)

iv) Sonological-Ultrasonography (K.U.B.)

3. Follow up

Three follow ups at 15, 30 and 45th day of registration of every patient was done.

CRITERIA FOR ASSESSMENT -

Most of the signs and symptoms of *Mutrashmari* described in *Ayurveda* are subjective in nature. To give the results objectively and for statistical analysis a multidimensional scoring system have been adopted. Score was given according to severity of symptoms. The scores obtained before and after treatment, statistical analysis and percentage relief was taken to know the efficacy of therapy.



A) Subjective Criteria (Clinical Assessment) -

Severities of Symptoms were graded on the basis of a “Symptom rating scale”.

- Complete absence of the signs and symptoms - 0
- Mild degree of the signs and symptoms - 1
- Moderate degree of the signs and symptoms - 2
- Severe degree of the signs and symptoms - 3
- Extreme condition of signs and symptoms - 4

The details of the scores adopted for the chief signs and symptoms in the present study were as follows –

1) Pain (*Vedana*)

- No pain - 0
- Occasional pain did not require treatment - 1
- Occasional pain but, required treatment - 2
- Continuous dull ache pain, required treatment - 3
- Severe Continuous pain, but did not show relief even after treatment - 4

2) Pain increase with jerks (*AyasatAtiruk*)

- Absent - 0
- Present - 1

3) Burning Micturition (*Mutradaha*)

- No burning micturition – 0
- Occasional burning micturition - 1

• Occasional burning micturition, required treatment - 2

• Continuous burning micturition, required treatment - 3

• Continuous severe burning micturition but did not show relief even after treatment - 4

3) Dysuria (*Mutrakriccha*)

- No dysuria - 0
- Occasional - 1
- Occasional dysuria which require treatment - 2
- Continuous dysuria which require treatment - 3
- Continuous severe dysuria but did not show relief even after treatment - 4

4) Increased Frequency of Micturition (*Muhuhmehate*)

- Absent (up to 6 times / day & night) - 0
- Mild (7 to 9 times / day & night) - 1
- Moderate (10 to 12 times / day & night) - 2
- Severe (13 to 15 times / day & night) - 3
- Extremely Sever (> 15 times / day & night) - 4

5) Bifurcated Streamof Urine (*Visheernadhara*)

Absent 0

- Present - 1



6) Interrupted Stream of Urine

(*Mutradhara Sanga*)

- Absent - 0
- Present - 1

7) Turbid Urination (*Avilmutrata*)

- Absent - 0
- Present - 1

B) Objective Criteria

Based on various investigations done before and after treatment, following score system was adopted:-

1) Urine –

i) **Hematuria** (SarudhiraMutrata): On the basis of microscopic urine analysis

- No RBC/Hpf- 0
- 0 – 5 RBC/Hpf- 1
- 6 – 10 RBC/Hpf- 2
- 11 – 15 RBC/Hpf- 3
- >16 RBC/Hpf- 4

ii) **Passing of Urine with Gravels**

(*Sasiktam*)

- Urinary Crystals – Absent - 0
- Urinary Crystals – Present - 1

3) Sonological-Ultrasonography (K.U.B.)

i) **Size of calculi**

- No Stone - 0
- Stone up to 4 mm - 1
- Stone 4.1 mm – 6 mm - 2
- Stone 6.1 mm – 8 mm - 3
- Stone 8.1 mm – 10 mm - 4

CRITERIA FOR TOTAL EFFECT OF THERAPY

For the assessment of the total effect of the therapy following four categories were taken into considerations.

Cured – 76% to 100%

✓ Complete relief in subjective signs and symptoms.

✓ Absence of any calculus in urinary tract with radiological evidence.

Markedly Improved – 51% to 75%

✓ Relief in subjective signs and symptoms

✓ Downward movement or partial disintegration of *Mutrashmari* with radiological evidence.

Improved – 26% to 50%

✓ Relief in signs and symptoms

✓ Without any change in size of stone confirmed with radiological evidence.

Unchanged – Up to 25%

✓ Relief in subjective sign and symptoms.

Pre Treatment Observations

All the patients were studied along with the registration by noting down their demographic profile including their age, sex, address, occupation, socio-economic status, marital status, dietary habits etc. After preliminary registration, patients were subjected to detailed case history taking, physical, general and systemic examinations. In history and physical examination importance was given to Genito-urinary system. During this all



other relevant information like *Ashtavidha Pariksha* and assessment of *Sharirika-Prakriti* (based on the features described in classical texts) etc. were noted.

OBSERVATIONS & RESULTS

Age: - In the present study maximum number of patients i.e. 70% belonged to the age group 20-30 years followed by age group of 41-50 years (20.00%) then age group 31-40 years (10%).

Sex: - 70% patients in clinical trial were male & 30 % were females.

Religion:-Maximum number of patients i.e. 76.66% belonged to Hindu religion and the rest i.e. 23.34% were Muslim.

Education:- Maximum number of patients i.e.36.66% are Graduate, 20% were educated up to secondary class, 20% were Uneducated, 13.33% were up to primary and 10% were postgraduate.

Marital status:-Maximum numbers of patients 76.66% were married & 23.33% patients were unmarried.

Occupation:- Maximum i.e. 30 % patients were student & house wife each, followed by 23.33% were of labour class, 6.67% were farmers, 6.67% were businessman and 3.33% were servicemen.

Socioeconomic status:-Among 30 patients 50% were from lower class (poor), 33.33% from middle class and 16.66% patients from upper class.

Habitat:-In the present study maximum number of patients i.e. 66.67% belonged to the *Sadharan Desha* followed by 33.33% from *Jangala Desha*.

Family history:-Maximum i.e. 80% patients had no significant family history, whereas 20% were having family history of *Mutrashmari*.

Food habit:-Maximum i.e. 66.67% patients were taking vegetarian diet and 33.33% patients were from mixed diet.

Addiction: - Maximum i.e. 36.66% patients were addicted to tea and coffee, 30% patients were addicted to Gutakha chewing, 13.33% were addicted to alcohol, 03.33% patients were addicted to smoking, and 16.66% were non-addicts.

Sharirika-prakriti:-In *Sharirika Prakriti* maximum i.e. 46.66% patients belonged to *Vata-Kaphaja Prakriti*, 30% patients belonged to *Vata-Pittaja* and 23.33% were *Kapha-Pittaja*.

Sara:- Maximum i.e. 30% patients were having *Asthi Sara* followed by 20% of *Rakta Sara*, 16.66% of *Meda Sara*, 13.33% of *Majja Sara* and 10% of *Twak & Mamsa Sara* each.

Samhanana: - In this study, maximum i.e. 80% patients were with *Madhyama Samhanana*, 16.66% patients were with *Alpa Samhanana*, whereas 3% patients were *Susamhata*. **Satva:**-Maximum i.e. 46.67% patients possessed *Madhyama*



Satva, 33.33% patients possessed *Pravara Satva*, whereas 20% patients possessed *Avara Satva*.

Satmaya:-Maximum i.e. 73.33% patients were *Katu Rasa Satmaya*, 70% were *Madhura satmaya*, 43.33% were *Lavana satmaya*, 6% were *Amla satmaya*. 83.33% patients possessed *Snigdha Satmaya* while 16.67% were *Ruksha satmaya*. 70% patients possessed *Ushna Satmaya* while 30% were *Sheeta satmaya*.

Agni:- In the present study, maximum i.e. 53.33% patients were with *Sama Agni*, *Vishama Agni* was noted in 23.33% patients, 16.67% patients were with *Mandagni*, whereas 6.67% patients were with *Tikshanagni*.

Koshtha:-Maximum i.e. 56.67% patients were possessing *Madhyama Koshtha*, followed by 43.33% patients with *Krura Koshtha*.

Nidra:-Maximum i.e. 40% patients were found to have *Atinidra* followed by 36.67% of patients with *Khandita Nidra*, followed by 20% patients of *Samyaka Nidra* & 3.33% patients were having *Alpa Nidra*.

Ahara Shakti:- Maximum i.e. 73.33% patients were reported with *Madhyama Ahara Shakti*, 20% patients were having *Pravara Ahara Shakti*, and 6.67% patients were having *Avara Ahara Shakti*.

Vyayama Shakti:-Maximum i.e. 70% patients were reported with *Madhyama Vyayama Shakti*, 20% patients with *Avara Vyayama Shakti* and 10% patients with *Pravara Vyayama Shakti*.

Type wise:-Maximum patients i.e. 56.66% suffered from *Vataj Ashmari*, 23.33% with *Kaphaj Ashmari*, 20% with *Pittaj Ashmari*, while none of the patient with *Shukraj Ashmari*.

Site of stone:-Maximum number of patients i.e. 80% were having stone in kidneys, 20% in ureter, while none of the patient was found with urinary bladder and urethral stones. Maximum patient i.e. 90% were having unilateral stone, while only 10% had bilateral stones.

Size wise:-Maximum patients i.e. 45.71% had stone of size 4.1mm - 6mm followed by 34.28% having stone of size 8.1mm – 10mm, 11.42% having stone of size 6.1mm – 8 mm, 8.57% having stone of size up to 4mm.

Nidanasevan:-It was observed that in the category of *Aharaj Nidana Sevana* maximum number of patients i.e. 63.33% were indulging with *Alpa Jala Sevana*, followed by 60% with *Adhyashana*, 50% with *Sheeta Snigdha Guru Madhura Ahara*, 43.33% with *Samashana*, 43.33% with *Ajirna Bhojana*, 36.33% with *Tikshna Aushadhi Sevana*, 23.33% with *Anupa Mansa*, 23.33% with *Ruksha Ahara*,



16.33% with *Matsya Sevana*, 13.33% with *Ati Madyapana*.

While in the category of *Viharaj Nidana Sevana* maximum number of patients i.e. 46.66% were indulging with *Divaswapa*, followed by 43.33% with *Mutra Vegadharana*, 30% with *Nitya Druta Pristha Yana*, 20% with *Ati-Vyayama*, 3.33% with *Kati Skandha Atidharanat*. All the patients were indulging with *Asanshodhana*.

DISCUSSION

Following points were discussed & a probable reason has been given below:-

Age- Age has no direct relation with the *Ashmari* formation, but it is considered that it is more common in third and fourth decade of life.

Sex- There is another theory that testosterone hormone plays an important part in the formation of *Mutrashmari*. Findayson and Richardson postulated that females have less testosterone level, so they are less prone to disease.

Marital status- The incidences of this disease are more in between the age of 21 to 40 years, so it is natural that maximum person in this age will be married. Otherwise there is no specific role of marital status in development of *Mutrashmari*.

Religion- Here, the factor of dominance of Hindus in this area should be considered.

Education - There is no direct relation between education and the disease.

Occupation- The housewives and students have sufficient time to sleep in the day time (*Divasvapna*) and indulge in *ApathyaSevana*. So it may play a role in *Ashmari* formation.

Addiction - As tea and coffee is rich source of oxalates, so it may lead to oxalate type of stone formation.

Family history- Urolithiasis can also transfer hereditically.

Prakriti - Data favours the concept given by *Acharyas* in context of *Ashmari* formation, that *Vata Dosha* plays an important role for *Sthana Samshraya* of *Kapha Dosha* for the formation of *Ashmari*.

Satva - In total regarding *Sara*, *Samhanana* and *Satva*, it has been observed that they are not having any direct role in the formation of *Mutrashmari*, but they are useful in assessing the *Aturbala*, which is helpful in prognosis.

Nidra - *Divaswapna* was found in many patients who may increase *Kapha Dosha* leading to *Ashmariformation*.

Nidana Sevana- According to Ayurvedic principles, all *Nidana* plays a definite role



in formation of *Mutrashmari* by causing vitiation of *Dosha* and *Srotovaigunya*.

In this modern time, the dietic materials like fast foods, cold drinks and food stuffs act as lithogenic substances and may play a main role in the formation of *Mutrashmari*. The food materials like tea, strawberries, spinach, tomato, cabbage etc. are rich in oxalates, milk and ice-cream are rich in calcium and red meat, fish and pulses are rich in uric acid, may lead to stone formation accordingly. It is also reported that less fluid intake and holding of urination increases the concentration of stone forming substances in the urine and may be the causative factor of stone formation.

Site of stones - Kidneys are more prone to calculi formation. Chances of sedimentation of particles are more in it, as the filtration process takes place over here, which may lead to stone formation. Ureteric and urethral stones are less because they are the secondary stones.

Type of stones - In the present study, *Vataja* (oxalate) *Ashmaries* have been found more and in modern texts it has been clearly mentioned that these oxalate stones are mostly single in existence. This is the reason that maximum patients were found having single stone.

Clinical features- Maximum patients were having complaint of Pain, burning micturition, dysuria, frequent micturition & turbid urine (**Table-1**).

Table 1 Incidence of Clinical features' in 30 patients of *Mutrashmari* (Urolithiasis)

Sr. No.	Clinical Features	Group A	Group B	Total	%
1	Pain (<i>Vedana</i>)	15	15	30	100
2	Pain increased with jerks (<i>Ayasat Atiruk</i>)	11	14	25	83.33
3	Burning micturition (<i>Mutradaha</i>)	8	13	21	70
4	Dysuria (<i>Mutrakricchra</i>)	7	10	17	56.67
5	Hematuria (<i>Sarudhira Mutrata</i>)	3	6	9	30
6	Increased frequency of micturition (<i>Muhuh Mehate</i>)	9	7	16	53.33
7	Bifurcated stream of urine (<i>Visheerna Dhara</i>)	0	0	0	00
8	Interrupted stream of urine (<i>Mutradhara Sanga</i>)	3	6	9	30
9	Turbid urination (<i>Avilmutrata</i>)	8	8	16	53.33
10	Passing of urine with gravels (<i>Sasiktam</i>)	7	6	13	43.33
11	Nausea (<i>Hrillasa</i>)	4	9	13	43.33
12	Vomiting (<i>Vami</i>)	3	4	7	23.33
13	Fever (<i>Jwara</i>)	2	5	7	23.33
14	Dribbling Micturition (<i>Muhur Mehti Bindushah</i>)	4	4	8	26.67
15	Acute Pain (<i>Teevra Vedana</i>)	7	10	17	56.67
16	<i>Vasti Daha</i>	4	2	6	20
17	<i>Ushna Sparsha in Vastipradesha</i>	2	1	3	10
18	<i>Vasti Toda</i>	4	3	7	23.33
19	<i>Vasti Gaurav</i>	2	2	4	13.33
20	<i>Vrishana Shotha</i>	0	0	0	00



Effect of therapy in Group A (Tab Cystone)

It has been observed that out of 16 stones found in the kidneys, 6 of them were expelled out and 10 were decreased in size.

Table 2 Effects of Therapies on ‘Size of Stone

Groups	Mean Score			% Change	S.D. ±	S.E. ±	t	p	Result
	B.T.	A.T.	Diff.						
G-A	2.9333	1.2	1.7333	59.09	1.334	0.344	5.030	<0.0001	HS
G-B	3.4	0.4	3	88.23	1.414	0.365	8.215	< 0.0001	HS

Effect of therapy in Group B (Laghu Varunadi Kwath)

It has been observed that 12 stones were found in the kidneys, out of them 8 are expelled out and 4 are decreased in size. 5 stone are found in ureters which are expelled out after the course of therapy.

Table 3 Effects of Therapies on Laboratory Parameters

Parameter	Group	Mean Score			% Change	S.D. ±	S.E. ±	t	p	Result
		B.T.	A.T.	Diff.						
Hb%	G-A	13.05	12.93	0.12	0.919	1.249	0.322	0.372	>0.05	NS
	G-B	13.91	13.76	0.146	1.054	1.215	0.313	0.467	>0.05	NS
S. Urea	G-A	29.86	27.36	2.5	8.370	5.621	1.451	1.722	>0.05	NS
	G-B	30.35	27.30	3.046	10.03	4.773	1.232	2.472	<0.05	S
S.Creatinine	G-A	0.88	0.866	0.013	1.515	0.106	0.027	0.487	> 0.05	NS
	G-B	0.886	0.873	0.013	1.503	0.241	0.062	0.213	>0.05	NS
S.Uric acid	G-A	5.013	5	0.013	0.266	0.461	0.119	0.112	>0.05	NS
	G-B	5.08	4.993	0.086	1.706	0.626	0.161	0.535	>0.50	NS
S.Calcium	G-A	9.36	9.273	0.086	0.925	0.184	0.047	1.817	>0.05	NS
	G-B	9.753	9.333	0.42	4.306	0.823	0.212	1.974	>0.05	NS
S.Albumin	G-A	4.32	4.273	0.046	1.080	0.531	0.137	0.34	>0.05	NS
	G-B	4.413	4.353	0.06	1.359	0.405	0.104	0.573	>0.05	NS

Probable mode of action of Laghu Varunadi Kwath -

For the manifestation of the disease ‘Ashmari’ the ‘Kapha Dosha’ is the main factor, which contribute the nucleus for the pathogenesis. For that, the main motto of

Only 1 stone is found in ureter which is expelled out after the course of therapy. Results are statistically highly significant (p < .001). (Table-2)

Results are statistically highly significant (p < .0001) (Table-2).

Effect of therapies on Laboratory parameters

A significant (<0.05) effect was seen in Group B patients on serum urea. Other parameters in both the groups showed not significant effect (Table-3).

the treatment must be *Kaphahara*, *Lekhana* and *Mutrala* (Diuretic).

The formulation taken for the study, *Laghu Varunadi Kwath* possesses all the needful actions like *Kaphahara*, *Lekhana* and *Mutrala*. The five ingredients of the compound pacify *Kapha Dosha* and have



Lekhana property by virtue of their *Ushna Veerya*. The *Lekhana Karma* is again enhanced by *Yavakshara*.

So overall result of the drug is *Kapha-Vata Shamaka*, *Ashmari bhedaka* and *Mutrala* which hampers the *Ashmari* formation and expels the formed *Ashmari*.

Table 4 Effect of Tab. Cystone (Group A) on Clinical features

Clinical features	Mean Score			% Change	S.D. ±	S.E. ±	t	p	Result
	B.T.	A.T.	Diff.						
<i>Vedana</i>	2.533	1	1.533	60.526	0.743	0.191	7.990	<.0001	HS
<i>AyasatAtiruk</i>	0.733	0.4	0.333	45.455	0.488	0.126	2.646	<0.05	S
<i>Muttradaha</i>	1.266	0.4	0.866	68.421	0.990	0.255	3.389	<0.01	HS
<i>Mutra-kricchra</i>	1.133	0.333	0.8	70.588	1.014	0.261	3.055	<0.05	S
<i>SarudhiraMutrata</i>	0.2	0.066	0.133	66.667	0.351	0.090	1.467	>0.05	NS
<i>Muhuh Mehate</i>	0.8	0.333	0.466	58.333	0.516	0.133	3.5	<0.01	HS
<i>Mutradhara Sanga</i>	0.2	0.133	0.066	33.333	0.258	0.066	1	>0.05	NS
<i>Avilmutrata</i>	0.533	0.066	0.466	87.5	0.516	0.133	3.5	<0.01	HS
<i>Sasiktam</i>	0.466	0.066	0.4	85.714	0.507	0.130	3.055	>0.05	NS

Table 5 Effect of *Laghu Varunadi Kwath* (Group B) on Clinical features

Clinical features	Mean Score			% Change	S.D. ±	S.E. ±	t	p	Result
	B.T.	A.T.	Diff.						
<i>Vedana</i>	2.733	0.333	2.4	87.805	0.910	0.235	10.21	<.0001	HS
<i>Ayasat Atiruk</i>	0.933	0.266	0.666	71.429	0.488	0.126	5.291	<.0001	HS
<i>Muttradaha</i>	2.133	0.133	2	93.75	1.069	0.276	7.245	<.0001	HS
<i>Mutra-kricchra</i>	1.6	0	1.6	100	1.242	0.320	4.988	<.0002	HS
<i>Sarudhira Mutrata</i>	0.533	0	0.533	100	0.743	0.191	2.779	<0.01	S
<i>Muhuh Mehate</i>	1.066	0.066	1	93.75	1.133	0.292	3.415	<0.01	HS
<i>Mutradhara Sanga</i>	0.4	0.066	0.333	83.333	0.488	0.126	2.645	<0.01	S
<i>Avilmutrata</i>	0.533	0	0.533	100	0.516	0.133	4	<0.01	HS
<i>Sasiktam</i>	0.4	0	0.4	100	0.507	0.130	2.091	<.001	HS

CONCLUSION

Following conclusions may be drawn from current research project:-

- Person of age group 20-40 years are more prone to *Mutrashmari*.
- Amongst various causative factors of *Mutrashmari* (Urolithiasis), the most common causes are *Asanshodhana*, *Alpa Jala Sevana*, *Adhyashana*, *Samashana*, *Sheeta-Snigdha-Guru-Madhura Ahara*, *Ajirna Bhojana*, *Divaswapa*, *Mutra Vegadharana*.

• “*Laghu Varunadi Kwath*” is safe, economical and effective remedy for the management of *Mutrashmari*.

• On comparison of the efficacy of *Laghu Varunadi Kwath* and Tab. Cystone, *Laghu Varunadi Kwath* seems to be more effective in the management of *Mutrashmari* (Table- 4 & 5).

• *Laghu Varunadi Kwath* posses the ideal properties of disintegration and expulsion of urinary stones and it help to reduce sign and symptoms of *Mutrashmari* (Urolithiasis).



- Therefore, it can be concluded that *Laghu Varunadi Kwath* may prove to be a potent drug in the management of *Mutrashmari*.



REFERENCES

1. Sushruta Samhita edited by Kaviraj Ambikadutta Sashtri, Sutra sthan, Chapter-33/4, Chaukhambha Sanskrit Sansthan, Varanasi, edition 2010.
2. Sushruta Samhita, Prof. K.R. Shrikantha Murthy, vol-1, Nidan sthan, Chapter 3/24-25, Chaukhambha Orientalia, Varanasi-221001, second edition-2004,
3. Sushruta Samhita, Shri Dalhanacharya, Introduction by Prof. P.V. Sharma, Nidan sthan, Chapter- 3/26, Edition-2014, Chaukhambha Orientalia Varanasi-221001.
4. Sushruta Samhita, Prof. K.R. Shrikantha Murthy, vol-1, second edition-2004, Nidan sthan, Chapter-3/4, Chaukhambha Orientalia, Varanasi-221001(U.P.).