



Research Article

EFFICACY OF ELADI YOGA KWATHA IN THE MANAGEMENT OF RENAL CALCULI: A CLINICAL STUDY WITH PRE-POST STUDY DESIGN

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ABSTRACT


Renal calculi (urolithiasis) are the most prevalent among urinary disorders characterized by formation of stone due to crystallization of urinary salts. Treatment of renal calculi depends upon the size, symptoms and site of calculi. Modern management includes invasive, non-invasive procedures which are expensive or with side effects. Ayurveda has given a detailed description on *Asmari* explaining its *Nidana* and there are various formulations mentioned having *Asmari bhedaka* and *Asmari nashana* (disintegration of calculi) property which are cost effective, which alleviates the *Nidanakara doshas* and bring them to normalcy with no complications. **Aim:** To evaluate the efficacy of *Eladi yoga kwatha* in reducing the size of renal calculi. **Materials and methods:** Pre-Post study design with 27 participants of age group 30-60 years diagnosed with renal calculi of size 4-10mm in USG (Abdomen and Pelvis) were selected in a single group on the basis of inclusion and exclusion criteria. *Eladi Yoga Kwatha* was given in the dose of 48ml, twice daily, with *Shilajathu* (1.5g) and *Eranda thailam* (6ml) as *Anupana*, before food, for 30 days. Assessment was done on 0th and 31st day by USG (Abdomen and Pelvis) for the size and number of renal calculi before and after the treatment. Data were analysed using Wilcoxon signed rank test and paired t test. **Results:** Size and number of calculi showed significant reduction and no adverse effects were reported. **Conclusion:** From this study, it is proven that *Eladi yoga kwatha* is effective in reducing the size of renal calculi, confirmed through USG (Abdomen and pelvis).

INTRODUCTION

Renal stones vary in frequency around the world, probably as a consequence of dietary and environmental factors, but genetic factors also contribute in the formation of renal calculi. Mainly 80% of renal stones contain crystals of calcium oxalate, 15% contain magnesium and ammonium phosphate, and small numbers of pure cystine or uric acid stones. This can occur at any age but maximum incidence is seen in between 30-60 years. Renal calculi is mainly diagnosed clinically with pain and tenderness in the renal angle, dysuria and burning sensation during micturition affecting the normal flow of urine. Most number of stones less than 4mm in diameter will pass out through the urine spontaneously and lesser

number of stones of greater than 10mm require active intervention [1].

Modern interventions include extracorporeal shock wave lithotripsy (ESWL), percutaneous nephrolithotomy (PCNL), ureteroscopy, and, in rare cases, open surgical removal. Though effective, these techniques are highly expensive and may cause complications especially if it is not followed with proper post regime. The complication includes traumatic injury, infection, and retention of residual fragments that predispose to recurrence. The high recurrence rate diminishes the long-term success rate of the treatment and cost barriers often limit accessibility to advanced surgical options. Renal calculi are with high recurrence rates even after surgical interventions like extracorporeal shock wave lithotripsy (ESWL) and percutaneous nephrolithotomy (PCNL). Complications, costs, and residual stone fragments limit the long-term success of modern therapies [2].

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In Ayurveda, renal calculi termed as *Asmari*, is classified among the *Ashtamahagada Vyadhis* (eight grave disorders) and is also referred as *Anthaka* due to their potentially life-threatening nature. Classical texts attribute the pathogenesis of *Asmari* as the aggravation of *Kapha dosha* in individuals habitually consuming *Ahita ahara-vihara* (unwholesome diet and lifestyle).

Ayurvedic classics describe numerous herbal formulations for the management of *Asmari*. If it is treated in the initial stages, can be cured with these herbal medications. But there are much more limitations to various herbal medications due to the involvement of rare ingredients and non-availability of herbs, complex preparation methods etc. limiting their clinical utility now a days [3].

Eladi yoga kwatha is a formulation mentioned in the *asmari chikitsa* of *Haritha samhitha*, containing ingredients such as *Ela*, *Kana*, *Vasa*, *Triphala*, *Gokshura*, *Renuka*, *Pashanabheda*, and *Madhuka*, along with *Eranda thaila*, *Shilajathu*, and *Sarkara* serving as *Anupana*, primarily providing *Mutrala* and *Asmarigna* effects. The specified *Anupana* is combined based on the Doshic involvement in renal calculi namely *Vata*, *Kapha*, and *Pitha*. Calcium oxalate crystals are indicative of *Vatika asmari*, while Calcium phosphate crystals signify *Kaphaja asmari*, and stones composed of cystine and uric acid are categorized as *Pithaja asmari*. As renal calculi is caused due to calcium oxalate and phosphate commonly, *Eladi yoga kwatha* is administered with *Shilajathu* and *Eranda thailam* as *Anupana* [4].

Eladi Yoga Kwatha, mentioned in *Asmari Chikitsa adhyaya* of *Haritha samhitha* (chapter no 31), is formulated with ingredients having *Mootrala* (diuretic) and *Asmarigna* properties, facilitating stone disintegration and expulsion. Its components are herbal, affordable, readily available, and simple to prepare, making it a practical and economically viable alternative to expensive surgical procedures [5].

AIM

To find out the efficacy of *Eladi yoga kwatha* in the management of renal calculi.

OBJECTIVE

To evaluate the efficacy of *Eladi yoga kwatha* in reducing the size of Renal calculi.

MATERIALS AND METHODS

- Study Design: Pre- and post-interventional clinical study.
- Study Setting: OPD and IPD of Department of Shalyatantra, Government Ayurveda College, Thiruvananthapuram.
- Study population: 27 participants aged in the group of 30–60 years, with renal calculi of size 4–10 mm diagnosed by USG (abdomen and pelvis).
- Intervention: *Eladi Yoga Kwatha* 48ml, twice daily, with *Shilajathu* (1.5g) and *Eranda thailam* (6ml) as *Anupana*, before food, for 30 days
- Assessment: USG (abdomen & pelvis) on day 0 and 31st for assessing size and number of renal calculi.
- Sampling method: Consecutive sampling.
- Statistical Analysis: Wilcoxon signed-rank test and Paired t-test are applied to the data.

Trial Drug Details

Table 1: Details of Drug in the Formulation

Drug	Botanical name	Part used	Family
<i>Ela</i>	<i>Elettaria cardamom Maton</i>	Seed	Zingiberaceae
<i>Kana</i>	<i>Piper longum Linn</i>	Fruit	Piperaceae
<i>Vrisha</i>	<i>Adhatoda vasica Nees</i>	Leaves	Acanthaceae
<i>Trikantaka</i>	<i>Tribulus terrestris Linn</i>	Seed	Zygophyllaceae
<i>Renuka</i>	<i>Vitex castus L</i>	Seed	Verbanaceae
<i>Pashanabheda</i>	<i>Rotula aquatica Lour</i>	Root	Boraginaceae
<i>Madhuca</i>	<i>Maduca longifolia L</i>	Flower	Sapotaceae
<i>Amalaki</i>	<i>Emblica officianalis Gaertn</i>	Fruit	Euphorbiaceae
<i>Hareethaki</i>	<i>Terminalia chebula Retz</i>	Fruit	Combrataceae
<i>Vibheethaki</i>	<i>Terminalia bellerica Roxb</i>	Fruit	Combrataceae
<i>Eranda thailam</i>	<i>Ricinus communis Linn</i>	Seed	Euphorbiaceae
<i>Shilajathu</i>	<i>Asphalt</i>	Resin	

Table 2: Properties of the Drug in the Formulation

Drug	Rasa	Guna	Veerya	Vipaka	Karma
Ela	Katu, Madhura	Laghu, Uksha	Sita	Katu	Vatapitha hara
Kana	Madhura, Katu, Thiktha	Laghu and Snigdha	Anushna	Madhura	Vatakaphahara, Tridoshahara
Vasa	Tiktha, Kasaya	Laghu and Snigdha	Sita	Katu	Kaphahara, Rakthashodhaka
Madhuca	Madhura	Guru	Sita	Madhura	Vatahara, Balya
Amalaki	Katu, Madhura, Amla, Katu, Tiktha, Kashaya	Laghu Rooksha	Sita	Madhura	Kaphavatahara, Rasayana
Trikantaka	Madhura	Guru, Snigdha	Sita	Madhura	Mutrala vatanut
Renuka	Katu, Tiktha	Laghu	Sita	Katu	Vatahara, Kaphahara
Pashanabheda	Tiktha, Kashaya	Laghu	Sita	Katu	Bhedana, Vasthishodhana, Asmarighna, Mutravirechaniya
Hareethaki	Madhura, Amla, Katu	Laghu, Ruksha	Ushna	Madhura	Sarvadoshaprasamana
Vibheethaki	Kashaya	Laghu, Ruksha	Ushna	Madhura	Kaphapithahara, Bhedhaka
Shilajathu	Tiktha	Guru	Ushna	Katu	Mutrala, Yogavahi, Rasayana
Eranda Thailam	Katu, Madhura, Kashaya	Sookshma Snigdha	Ushnam	Madhura	Kapha Vatasamaka Basthishoolahara Anulomanam Medohara
Sarkara	Madhura	Snigdha	Sita	Madhura	Vatahara, Dhathuvaradhaka

Selection Criteria

Inclusion criteria

- Participants with renal calculi, confirmed by USG (Abdomen and pelvis)
- Size of the calculi within 4-10 mm.
- Participants of age group 30-60 years.

Exclusion criteria

- Participants with impaired renal functions.
- Diagnosed cases of malignancy.
- Pregnant and lactating mothers.
- Subjects with diagnosed case of Hydronephrosis and any kind of suspicious echogenicity in USG.

Intervention

48ml of *Eladi yoga kwatha* was given twice daily before food, adding 1.5g of *Shilajathu* and 6ml of *Eranda thailam* to it for a period of 30 days. The *Kashaya* was advised to be taken in lukewarm state.

Preparation of Eladi Yoga Kwatha

The drugs of *Eladi yoga kwatha* i.e., *Ela*, *Kana*, *Vrisha*, *Triphala*, *Renuka*, *Gokshura*, *Pashanabheda*,

Madhuka, were washed, dried in shade, chipped and dispensed in airtight packets of 48gm each (4.8gm of each drug). *Shilajathu* was given in packets of 1.5g, and *Eranda thailam* was given in bottles with a measuring jar. Printed directions regarding the preparation of *Kashaya* each day using 48g of drug were given to the patient in the regional language. 15 packets of *Kashaya choorna* for 15 days were given on first and second visits.



Fig. 1: Ingredients of Eladi Yoga Kwatha

Shilajathu Shodhana (Rasatarangini)



1. *Shilajatu* - 2 Parts
2. Hot water - 4 Parts
3. *Triphala kashaya* - 1 Part [6]

The *Shilajathu* powder was taken and the specified amount of hot water and *Triphala Kashaya* was added. The mixture was allowed to settle, and the supernatant layers were decanted. This process was repeated until a clear liquid was obtained. The decanted material was then concentrated over moderate heat until a thick paste was formed. The paste was dried under sunlight and preserved for further purposes.

Dosage Form, Dose and Dosage Schedule

Eladi yoga kwatha

- Dosage form - *Kwatha kalpana*
- Dose - 1 *pala* twice daily, before food
- *Anupanam* - *Eranda thailam, Shilajathu*
- Dosage schedule - 30 days [7]

Treatment Period

The total treatment period was 30 days.

15 packets of *Kashaya choorna* for 15 days were given on the first visit. The participants were advised to come on the 15th day on which an additional 15 packets of *Kashaya choorna* were given (for the next 15 days).

Clinical assessment of the size of the Renal calculi by USG (Abdomen and Pelvis) was done on the 0th and 31st day.

Withdrawal Criteria

During the treatment period, no participants were withdrawn from the study due to unexpected reactions to the treatment.

Assessment And Interpretation

Assessment and interpretation of patient data were done both before and after treatment based on the reduction in the size of renal calculi which was confirmed through USG (abdomen and pelvis) on 0th

and 31st day. Statistical analysis was done based on the data of the participants who had completed the treatment course during the period. The efficacy of the treatment was assessed by evaluating the improvement in the parameter i.e., Size of renal calculi through USG (Abdomen and Pelvis)

Assessment of Efficacy

Efficacy of medication was assessed by the objective parameter (size of the renal calculi).

Objective Parameter

Size of the renal calculi in USG (abdomen and pelvis) before and after the treatment assessed by USG (abdomen and pelvis).

OBSERVATION AND RESULTS

Based on USG (Abdomen and Pelvis)

16 participants had single calculi and 11 participants had multiple calculi. Together a total of 60 calculi were present and all of them were located in the kidney (renal calculi).

The size of the renal calculi varied from 4mm to 10mm diagnosed through USG (abdomen and pelvis) in the participants of the study. Out of 60 calculi, 38 of them got completely expelled and 20 of them showed a significant reduction in size. Only 2 of them showed no change in the size of the calculi. The calculi was present in left kidney in 10 of the participants, and 3 participants had calculi in right kidney. 14 among them had calculi in both left and right kidneys.

Among the participants having stones in left kidney, five of them showed complete expulsion of calculi and five of them showed reduction in the size of renal calculi. Three participants showed calculi on the right kidney of which one showed no change in the size of the calculi, one got expelled and one showed significant reduction in the size of the calculi.

Participants with calculi located on both kidneys, 6 of them showed complete expulsion of calculi, 7 showed both expulsion and reduction and 1 showed reduction in the size of renal calculi.

On the basis of above findings, it can be concluded that the formulation was found to be effective in the disintegration and expulsion of calculi and was highly statistically significant.

The drugs in the formulation possessed *Tridosahara, Asmaribhedana* and *Asmarinashana* properties due to which the disintegration and expulsion of renal calculi were possible.

Table 3: Renal Calculi Size and Number

Participant	Size of the Calculi (Mm)				Presence of Calculi				No. of Stones			
	Left Kidney		Right Kidney		Left Kidney		Right Kidney		Left Kidney		Right Kidney	
	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	5	4.3	0	0	Yes	Yes	No	No	1	1	0	0
2	9.2	3.2	0	0	Yes	Yes	No	No	1	1	0	0
3	0	0	4.4,4.4	4.4,4.4	No	No	Yes	Yes	0	0	2	2
4	4.6	0	0	0	Yes	No	No	No	1	0	0	0
5	4.4	0	3.8,4,3.2	3	Yes	No	Yes	Yes	1	0	3	1
6	4.4	0	0	0	Yes	No	No	No	1	0	0	0
7	4	0	0	0	Yes	No	No	No	1	0	0	0
8	3.5	0	3.4,7	4	Yes	No	Yes	Yes	1	0	2	1
9	3	0	5	3.2	Yes	No	Yes	Yes	1	0	1	1
10	9,9.2	4,5	0	0	Yes	Yes	No	No	2	2	0	0
11	8	4.1	9	3	Yes	Yes	Yes	Yes	1	1	1	1
12	0	0	6	3	No	No	Yes	Yes	0	0	1	1
13	5.5,5.5	0	4,4,4,4	2.5	Yes	No	Yes	Yes	2	0	4	1
14	5.4,4.2	3	5.6	2.6	Yes	Yes	Yes	Yes	2	1	1	1
15	4	0	0	0	Yes	No	No	No	1	0	0	0
16	4,4	0	0	0	Yes	No	No	No	2	0	0	0
17	4	0	4.8	0	Yes	No	Yes	No	1	0	1	0
18	6.5	0	4.6	0	Yes	No	Yes	No	1	0	1	0
19	9.8	2.7	0	0	Yes	Yes	No	No	1	1	0	0
20	0	0	5.8	0	No	No	Yes	No	0	0	1	0
21	5,5,2,5.5	3	5,5.8	3.1	Yes	Yes	Yes	Yes	3	1	2	1
22	10	3.2	0	0	Yes	Yes	No	No	1	1	0	0
23	3.8	0	6.1,4.6,4	0	Yes	No	Yes	No	1	0	3	0
24	4	0	4.2	0	Yes	No	Yes	No	1	0	1	0
25	5.5	2.8	4	0	Yes	Yes	Yes	No	1	1	1	0
26	8.3	3.2	6.7,7.2	0	Yes	Yes	Yes	No	1	1	2	0
27	5.2,4.8	3	4.2,5.7	0	Yes	Yes	Yes	No	2	1	2	0

Table 4: Based on Socio Demographic Data

Participant no.	Age	Sex	Occupation	Domicile	Educational Status	Diet
1	44	Female	House wife	Urban	School level	Non-veg
2	60	Male	Manual work	Rural	Graduate	Non-veg
3	56	Female	House wife	Urban	School level	Non-veg
4	57	Female	Office work	Urban	Graduate	Non-veg
5	60	Male	Manual work	Urban	School level	Non-veg
6	32	Male	Student	Rural	Post graduate	Veg
7	37	Female	Housewife	Urban	School level	Non-veg
8	45	Male	Office work	Urban	Graduate	Non-veg
9	32	Female	House wife	Rural	School level	Non-veg
10	31	Female	Office work	Urban	Post graduate	Non-veg
11	38	Female	House wife	Urban	School level	Veg
12	33	Female	Student	Urban	School level	Non-veg
13	39	Female	Office work	Rural	Post graduate	Non-veg

14	55	Male	Manual work	Urban	School level	Non-veg
15	39	Female	House wife	Urban	Post graduate	Veg
16	48	Male	Manual work	Urban	School level	Non-veg
17	58	Male	Manual work	Urban	School level	Non-veg
18	41	Male	Manual work	Rural	Graduate	Non-veg
19	58	Female	Manual work	Rural	School level	Non-veg
20	32	Female	Student	Urban	Graduate	Non-veg
21	46	Female	Manual work	Urban	School level	Non-veg
22	59	Female	Manual work	Rural	School level	Non-veg
23	52	Male	Manual work	Urban	Graduate	Non-veg
24	52	Female	Office work	Urban	Post graduate	Non-veg
25	55	Female	Manual work	Rural	School level	Non-veg
26	53	Female	Office work	Urban	Graduate	Non veg
27	54	Male	Manual work	Urban	School level	Non veg

Data Related to Socio-Economic Factors

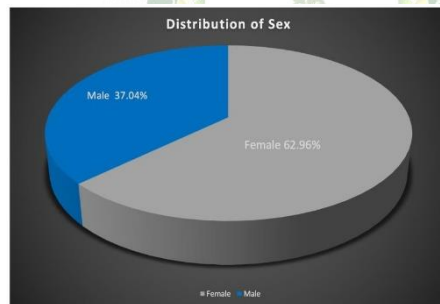
Gender

Table 5: Distribution According to Gender

Sex	Frequency (n)	Percentage (%)
Male	10	37.04
Female	17	62.96

The gender wise distribution of registered participants depicts that 62.96% of total participants were females and 37.04% were males.

Graph 1: Gender Wise Distribution of Participants



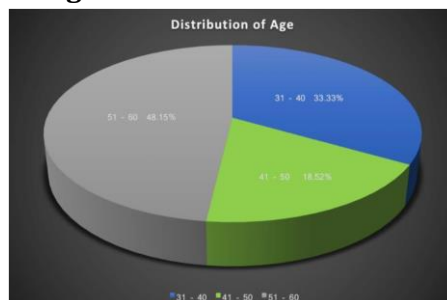
Age

Table 6: Distribution According to Age

Age	Frequency (n)	Percentage (%)
31-40	9	33.33
41-50	5	18.52
51-60	13	48.15

The age wise distribution of registered participants depicted that 33.33% were from 31- 40years of age group, 18.52% were from 41-50 years and 48.15% were from 51-60 years.

Graph 2: Age Wise Distribution of Participants



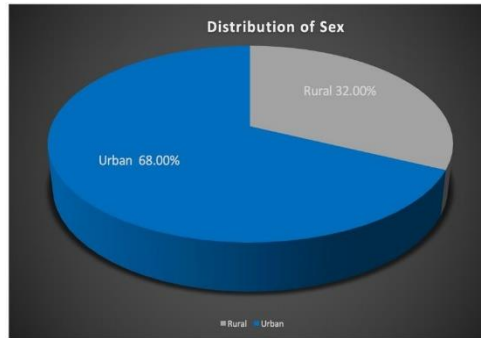
Domicile

Table 7: Distribution According to Domicile

Domicile	Frequency (n)	Percentage (%)
Urban	17	62.96
Rural	8	29.63

The 62.96% of the total population belonged to urban area and 29.63% belonged to rural area.

Graph 3: Domicile Wise Distribution of Participants



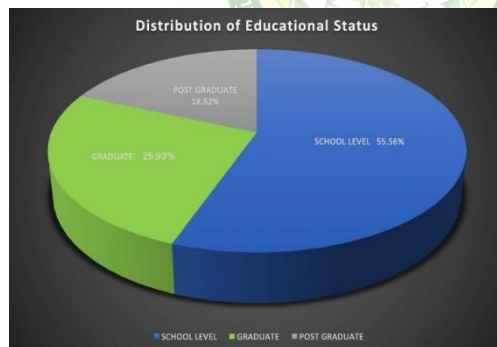
Educational Status

Table 8: Distribution According to Educational Status

Educational Status	Frequency (n)	Percentage (%)
School Level	15	55.56
Graduate	7	25.93
Post Graduate	5	18.52

Among the participants, 69.6% of the population had school level education, 17.4% had graduate level and 13% had post graduate level education.

Graph 4: Educational Status - Wise Distribution of Participants



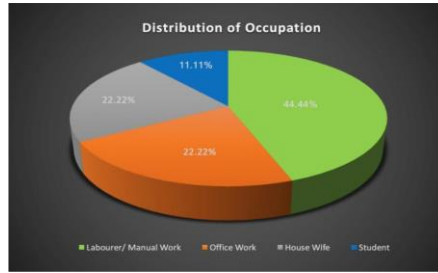
Occupation

Table 9: Distribution According to Occupation

Occupation	Frequency (n)	Percentage (%)
Labourer /Manual work	12	44.44
Office work	6	22.22
House wife	6	22.22
Student	3	11.11

Of the total participants, 44.44% were manual workers, 22.22% were involved in office work, 22.22% of them were housewives and 11.11% were students.

Graph 5: Occupational Status - Wise Distribution of Participants



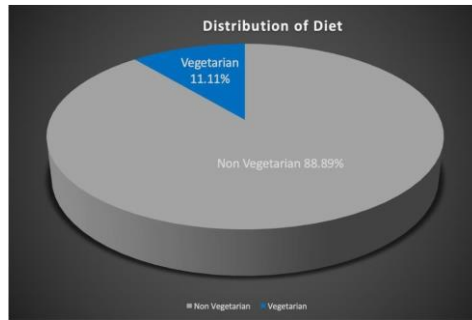
Diet

Table 10: Distribution According to Diet

Diet	Frequency (n)	Percentage (%)
Vegetarian	3	11.11
Non-Vegetarian	24	88.89

Of the participants 11.11% were vegetarians and 88.89% were non-vegetarians

Graph 6: Diet Wise Distribution of Participants



Total Number of Renal Stones

Table 11: Number of Stones Before and After Treatment

Variable	Mean (SD)	Median (IQR)	Z Score (p value)
Before Treatment	3.30 (1.38)	3 (1-3)	Ref
After Treatment	1.55 (0.89)	1.5 (0-1)	4.77 (<0.001)

The descriptive statistics for the total number of stones indicate that the mean number of stones before treatment (BT) was 3.30, with a standard deviation of 1.38, a median of 3, and an interquartile range (IQR) of 1 to 3. After treatment (AT), the mean decreased to 1.55, with a standard deviation of 0.89, a median of 1.5, and an IQR of 0 to 1.

The Wilcoxon signed-rank test showed a statistically significant reduction in the number of stones ($Z=4.77$, $p<0.001$). The above statistical evidence highlights the efficacy of the intervention in the management of Renal calculi.

Graph 7: Effectiveness on Total Number of Stones Before and After Treatment, Size of Stones in Left Kidney

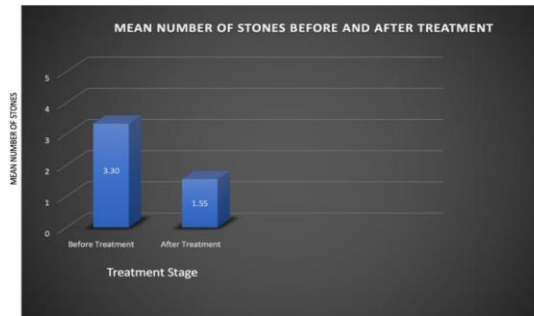


Table 12: Comparison of Stone Size in Left Kidney with respect to Baseline

Groups	Mean (SD)	Median (IQR)	Z value	p value
BT	3.99 (3.10)	4 (0-5.5)	Ref	-
AT	0.97 (1.61)	0 (0-2.8)	5.31	<0.001

The descriptive statistics for the left kidney stone size show a significant reduction after treatment. At baseline (BT), the mean stone size was 3.9 mm with a standard deviation of 3.10mm, a median of 4 mm, and an interquartile range (IQR) of 0 to 5.5 mm.

After treatment (AT), the mean size decreased to 0.97 mm with a standard deviation of 1.61 mm, a median of 0 mm, and an IQR of 0 to 2.8 mm. The Wilcoxon Signed-Rank Test revealed a statistically significant reduction in stone size, with a z-score of 5.31 and a p-value of <0.001

Graph 8: Stone Size in Left Kidney Before and After Treatment, Size of Stones in Right Kidney

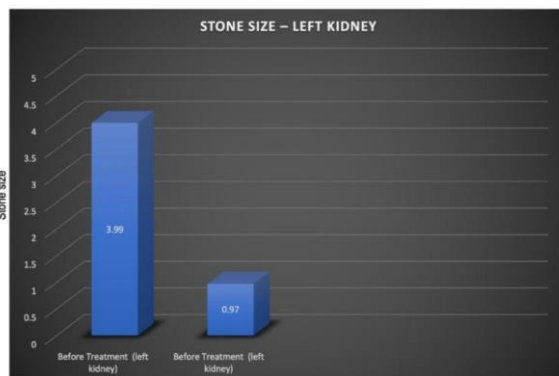


Table 13: Comparison of Stone Size in Right Kidney with respect to Baseline

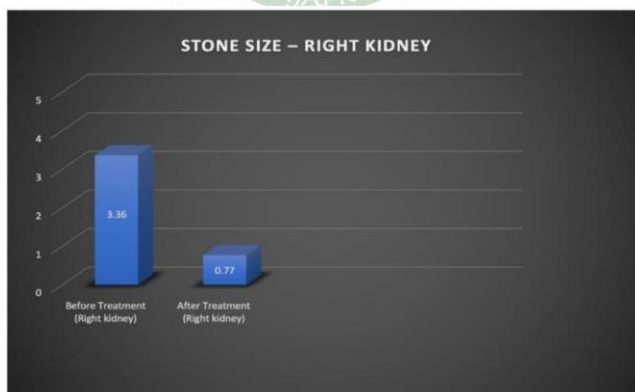
Groups	Mean (SD)	Median (IQR)	Z value	p value
BT	3.36 (2.60)	4 (0-5)	Ref	-
AT	0.77 (1.46)	0 (0-0)	5.03	<0.001

The descriptive statistics for the right kidney stone size show a significant reduction after treatment. At baseline (BT), the mean stone size was 3.36 mm with a standard deviation of 2.60 mm, a median of 4 mm, and an interquartile range (IQR) of 0 to 5 mm.

After treatment (AT), the mean size decreased to 0.77 mm with a standard deviation of 1.46 mm, a median of 0mm, and an IQR of 0 to 0mm.

The Wilcoxon Signed-Rank Test revealed a statistically significant reduction in stone size, with a z-score of 5.03 and a p-value of <0.001.

Graph 9: Stone Size In Right Kidney Before and After Treatment



DISCUSSION

Renal calculi (*Asmari*) are among the most challenging disorders due to their painful symptoms and recurrence. Ayurveda places *Asmari* within *Ashta Mahagada*, emphasizing its chronicity and potentially life-threatening consequences if untreated. Modern urology, despite remarkable advances in minimally invasive and surgical techniques (ESWL, PCNL, ureteroscopy), continues to face limitations such as residual stone fragments, high recurrence (30-50% within 5 years), and cost barriers. This dual challenge necessitates integrative solutions where traditional

Ayurvedic formulations with proven efficacy may play a primary role.

In this study, 48.15% of the participants were in the age group of 51-60 years and are more affected as compared to other age groups. This can be due to subclinical urinary tract issues which later on leads to gradual crystal deposition and reduced renal concentrating ability which increases the risk for the formation of renal calculi among the participants 88.89% participants of the study were non-vegetarians and 11.11% were vegetarians. The non-

veg diet contains elevated animal protein, which leads to elevated excretion of Calcium and uric acid and decreased urinary excretion of Citrate which can increase the risk of stone formation.

Action Based on Rasadi Panchaka of the Formulation

The formulation used in the present study contains drugs such as: *Ela*, *Kana*, *Vasa*, *Triphala*, *Gokshura*, *Renuka*, *Pashanabheda*, and *Madhuka* along with *Shilajathu* and *Eranda thailam* as *Anupana*. These herbs predominantly exhibit *Katu Rasa*, *Tikta Rasa*, and *Kashaya Rasa*, *Laghu* and *Rooksha Guna*, *Ushna Veerya*, and mostly *Katu Vipaka*. This combination effectively pacifies all three *Doshas*, with a particular emphasis on *Vata* and *Kapha*.

- *Katu Rasa* possesses *Krimighna*, *Shophahara*, *Lekhana*, and *Kaphahara* properties, aiding in the clearance of obstructions.
- *Kashaya Rasa* has *Lekhana* action helping in preventing the formation of nidus.
- *Tikta Rasa* acts as *Lekhana*, *Krimighna*, and *Pitta kaphahara*. Its *Lekhana* properties clear the urinary channels of minute crystalline deposits preventing aggregation.
- *Ushna Veerya* mitigates *Vata*, thereby alleviating pain caused by the abrasive movement of stone particles.
- *Katu Vipaka* helps reduce *Kapha Dosha*, while *Madhura Vipaka* acts as *Mootrala*, increasing urine output and thereby alleviating symptoms associated with *Asmari*
- *Ruksha guna* helps to reduce the *Kapha dosha* that contributes to stone formation through crystal aggregation and due to *Laghu* and *Lekhana* property, it prevents further nidus development.^[8]

Probable Mode of Action of the Formulation

Asmari is considered a *Kapha-pradhana Tridoshaja Vyadhi*, where in *Kapha* serves as the substratum facilitating the formation of renal stones. Vitiated *Vata* is primarily responsible for *Teevra Vedana*, and *Kricchra mootra nissarana*, while aggravated *Pitta* leads to *Daha* and *Rakta mutrata*. Prolonged urinary stagnation within the urinary tract results in increased concentration of urine and predisposes to infection, both of which accelerates the process of stone formation. Therefore, the management of *Asmari* requires *Tridoshaghna* drugs, particularly those possessing *Vata-kaphahara*, *Anulomana*, *Srotoshodhaka*, and *Mootrala* properties.

According to *Haritha samhita*, the *Asmaribhedana* actions of the drugs in *Eladi yoga kwatha* facilitates the disintegration or size reduction of calculi and promotes their expulsion

Eladi Yoga Kwatha is described in *Haritha Samhita*, *Asmari chikitsa*. The formulation includes *Ela*, *Kana*,

Vasa, *Triphala*, *Gokshura*, *Renuka*, *Pashanabheda*, and *Madhuka*, administered with *Shilajathu* and *Eranda Thailam* as *anupana*.

The probable action of the drugs in the formulation can be described as:

- *Ela*: The constituents of *Ela* such as cineole, terpinyl acetate, and limonene provide strong diuretic and antioxidant effects and *Ela* having the properties of *Katu rasa*, *Ushna virya*, and *Laghu-ruksha guna*, helps break the stone matrix, reduce recurrence, relieve colicky pain due to *Vata dosha*, and ensure smooth urine flow.
- *Kana*: Its major constituent piperine gives antispasmodic, diuretic, and anti-inflammatory activity. The properties of *Kana* such as *Katu rasa*, *Ushna virya*, *Vatanulomana*, *Deepana*, *Pachana*, and *Shothahara*, helps clear *ama*, and ease ureteric spasm.
- *Vasa*: Due to vasicine and vasicine, which enhance diuresis and reduce inflammation and *Vasa* having *Tikta- Kashaya Rasa*, *Shita Virya*, and *Shothahara Guna*, it reduces urinary tract swelling and helps clear lithogenic crystals.
- *Haritaki*: The drug provides antioxidant and mild diuretic action, supporting its *Kashaya-madhura rasa*, *Ushna virya*, and *Vata-kapha hara* activity in regulating metabolism and reducing urinary obstruction.
- *Vibhitaki*: *Vibhitaki*, known for its *Kashaya rasa*, *Ushna virya*, and *Kapha-pittahara* action, helps reduce the swelling of the tissues around the calculi and facilitates smooth flow of calculi.^[9]
- *Amalaki*: Its high vitamin C and potent antioxidants prevent oxalate crystallization and protect renal epithelium, aligning with its *Amla rasa*, *Shita virya*, and *Tridoshahara* effects in protecting the renal tissues.
- *Gokshura*: As saponins such as protodioscin and dioscin increase urine output and relax smooth muscles, and *Gokshura*, having *Madhura rasa*, *snigdha-guru guna*, and *Ashmari-hara* action, breaks stone aggregation and prevents further crystallization.
- *Harenuka*: Its flavonoids (casticin, luteolin) and iridoid glycosides (negundoside) act as antioxidants and antimicrobials. Thus, the properties of the drug such as *Katu-Tikta Rasa*, *Ushna Virya*, and *Shothahara-muttrala* qualities help prevent infection, reduce inflammation, and minimize stone formation.
- *Pashanabheda*: Because bergenin, arbutin, catechin, and gallic acid are proven anti-urolithiatic compounds, *Pashanabheda*, having *Ashmari-hara*, *Tikta-kashaya rasa*, and *Muttrala* properties, directly

inhibits calcium oxalate aggregation and enhances their expulsion.

- *Madhuka*: Its flavonoids and saponins provide antioxidant, anti-inflammatory, and mild diuretic effects. The properties such as *Madhura-tikta rasa*, *Shita virya*, and *Pitta-vata hara* helps in soothing urinary irritation and flushing crystals.
- *Shilajathu*: Because fulvic acid present in the drug helps break down mineral deposits and protect nephrons, *Shilajathu*, described with *Katu-tikta rasa*, *Ushna virya*, and *Kapha-vata hara* qualities, clears urinary blockages and supports urine flow.
- *Eranda Thaila*: Its main constituent ricinoleic acid relaxes smooth muscles and reduces inflammation. Thus, the Ayurvedic properties of *Eranda taila* such as *Vatashamana*, *Shothahara*, and *Bhedana*, helps to relieve ureteric spasm, lubricate passages, and support stone passage.^[10]

Hence this study demonstrated significant reduction in calculi size and number, confirmed by USG (Abdomen and Pelvis)

Limitations and Scope

- Larger, multicentric randomized controlled trials.
- Standardization of dosage, preparation, and quality control.
- Biochemical and molecular studies to validate mechanisms (crystal inhibition, antioxidant pathways).

CONCLUSION

The formulation significantly aided in the reduction in the size of renal calculi confirmed through USG (abdomen and pelvis) of the participants. The formulation also showed remarkable results in the expulsion of renal calculi as per the USG (abdomen and pelvis) impression.

These findings were both clinically and statistically significant. Hence it can be concluded that *Eladi yoga kwatha* is effective in the management of renal calculi of size less than 10mm. In the study group no side effects and adverse drug reactions were reported.

The integrative appraisal of *Eladi Yoga kwatha* demonstrates how classical Ayurvedic concepts and modern pharmacological insights can complement each other to provide a comprehensive understanding of therapeutic action. *Eladi Yoga Kwatha* thus stands as

a formulation explaining how Ayurvedic formulations can be scientifically and effectively integrated, particularly in the management of renal calculi.

Eladi Yoga Kwatha significantly reduced the size of renal calculi and promoted stone expulsion in patients with calculi of size less than 10mm. Hence it can be concluded that *Eladi yoga kwatha* given for a period of 30 days is effective in the management of Renal calculi. It is safe and cost-effective. Larger, multicentric randomized controlled trials are recommended for validation.

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