

**MANAGEMENT OF MULTIPLE RENAL CALCULI (*HISAT-E-KULYAH*) AND A URETERIC CALCULUS (*HISAT-E-HALIB*) BY UNANI PHARMACOPOEIAL FORMULATIONS – A CASE STUDY****\*<sup>1</sup>Mohammad Shamim Khan and <sup>2</sup>Sartaj Ahmad**<sup>1</sup>\*Unani Medical Officer, Government Unani Dispensary, Kota, Department of Unani Medicine, Rajasthan-324002, India.<sup>2</sup>Medical Officer (Unani), Government Unani Hospital, Eta, Department of AYUSH, Uttar Pradesh, India.**\*Corresponding Author: Dr. Mohammad Shamim Khan**

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**ABSTRACT**

*Hisat-e-Kulyah* (nephrolithiasis) is a most common disease of urinary system. It affects 10-12% of the population in industrialized countries which is caused by a complex process of several physicochemical events including super saturation, nucleation, growth, aggregation and retention with the kidney. Present paper deals with a case study was conducted on a 36 years old male having multiple calculi (10-12) of size 3-4 mm in left kidney and a single stone of sizes 4.5 mm at lower end of left ureter, were treated with *Qurs-e-Kaknaj*, *Qurs Kushta Hajrul Yahoood*, *Jawarish Zaruni* and *Sharbat-e-Bazuri Motadil*. Efficacy of the drugs was assessed on the basis of subjective and objective parameters. Ultrasonography (USG) of abdomen was performed at base line, post treatment of 2 months and 4 months subsequently. The follow-up observation was 15 days and duration of study was 4 months. The clinical improved response was excellent and significant after 15 days of treatment. USG finding was suggestive of absence of any calculus in the left kidney and ureter after 4 months of Unani treatment without operation. The formulations were found to be safe, effective and to prevent urinary supersaturation of lithogenic substances.

**KEYWORDS:** Renal Stone, Ureteric Stone, Unani Medicine, Lithotriptic activity, Diuretic activity.**INTRODUCTION**

Nephrolithiasis (*Hisat-e-Kulyah*) is one of the most common health problems that affect approximately 15 % population worldwide and about 2.3% population of India.<sup>[1,2]</sup> Its prevalence is as high as 7.6% in Satpura part of Maharashtra, Gujarat, Madhya Pradesh & parts of Andhra Pradesh. Pendse et. al. had reported a high and progressively increasing incidence of Nephrolithiasis in Udaipur and some other parts of Rajasthan in the western part of India.<sup>[3,4]</sup> In India, the "stones belt" occupies parts of Maharashtra, Gujarat, Punjab, Haryana, Delhi and Rajasthan. In these regions, the disease is so prevalent that most of the members of a family will suffer from kidney stones sometime in their lives.<sup>[5]</sup> Nephrolithiasis is more common in men (12%) than in women (6 %) with a peak incidence at 20-40 years of age in both sexes.<sup>[6]</sup> Children tend to get vesicle calculi in situations where they are malnourished.<sup>[2]</sup> Once recurrent, the subsequent relapse risk is raised and the interval between recurrences is shortened.<sup>[7-8]</sup>

**Types of Stone**

According to chemical components approximately 80% of stones are composed of calcium oxalate stone (*Hisat-*

*e-Tootiyah*) and calcium phosphate stone (*Hisat-e-Qaimooliyavi*); Calcium oxalate monohydrate (40-60%), Calcium oxalate dehydrate (40-60%), Calcium hydrogen phosphate (2-4%) Calcium orthophosphate (<1%). 10% of uric acid and urate stone (*Hisat-e-Bauliyah*) are composed of pure uric acid or ammonium / sodium urate.<sup>[9-12]</sup> 1% of struvite (magnesium ammonium phosphate produced during infection with bacteria that possess the enzyme urease), The remaining 1% of cystine stone (*Hisat-e-Zubaniyah*) contains sulphur.<sup>[8-10]</sup> 1% of Xanthine stone (*Hisat-e-Layyinah*) is very rare.<sup>[5-6]</sup> Mixed Stones (50-60%); Mixed calcium oxalate-phosphate (35-40%) Mixed uric acid-calcium oxalate (5%) is common.<sup>[9,12]</sup>

**Etiology**

According to Unani concept weakness of kidney, thick & viscous humor, concentrated & sticky fluid, *Su-e-Mizaj Kulyah* (ill temperament of kidney), *Warm-e-Kulyah* (nephritis), *Qurooh-e-Kulyah* (kidney ulcer), weakness of expulsive power (*Quwwat-e-Dafey'ah*) of kidney and high virulent temperature are considered as potential causes for nephrolithiasis.<sup>[13-18]</sup> While according to recent concept the major risk factors responsible for the nephrolithiasis are inadequate urinary drainage,

microbial infections, diet with excess oxalates and calcium, vitamin abnormalities i.e.; deficiency of Vitamin-A, excess of vitamin D, metabolic diseases like hyperparathyroidism, cystinuria, gout, intestinal dysfunction and environmental factors related to regions with hot and dry climatic conditions.<sup>[19]</sup> The anatomy of the upper and the lower tract might be contributing factor in predisposing an individual to urinary tract infection or stasis.<sup>[20]</sup> The major anatomical abnormalities found were obstruction of the ureteropelvic junction, horseshoe kidney, complete or incomplete duplicated ureter, bifid pelvis, and medullary sponge kidney, are known to be responsible for stone formation.<sup>[21]</sup> Increased rates of hypertension and obesity, which are linked to urolithiasis, also contribute to an increase in stone formation. Infecting organisms such as *Proteus pseudomonas* and *Klebsella* produce recurrent urinary tract infection and these organisms produce urea and cause stasis of urine which precipitates stone formation.<sup>[2]</sup>

**MATERIALS AND METHODS**

**Case Presentation**

A 36 years old male having urolithiasis, visited to Government Unani Dispensary, Bheemganj Mandi,

Kota, Rajasthan, India, for treatment. Since 22 days he was suffering from recurrent intermittent colicky pain in left renal iliac region and heaviness in left lumbar region, radiating towards suprapubic region, scrotum, tip of penis and thigh, associated with nausea, vomiting, increase frequency and dribbling of urination, burning micturition with foul smelling and reddish yellow color of urine. He had no past history of nephrolithiasis, Diabetes Mellitus, Hypertension or any other systemic ailment. His family history of nephrolithiasis was negative. His personal history was taken also as shown in Table 1. His vital signs were found normal as shown in Table 2. On systemic examining the abdomen, no signs of any abnormality were found. Diagnosis was confirmed by Ultrasonography (USG) of abdomen and pelvic region; findings suggested as multiple (10-12) tiny calculi of size 3-4 mm in calyces of left kidney (Figure 1A) and a calculus of sizes 4.5 mm at lower end of left ureter (Figure 1B). His blood and urine analysis reports were within normal limits as shown in Table 3. Informed written consent has been taken from the patient prior to the treatment.



**Figure 1: A Showing Multiple (10-12) tiny calculi of 3-4mm.**



**Figure 1B: Showing Left Ureteric Calculus.**



**Figure 2A: Showing Normal Left Kidney, No calculus was found.**



**Figure 2B: Showing No Ureteric Calculus.**

### Therapeutic Intervention

The patient advised to take 2 tablets of *Qurs Kushta Hajrul Yahood*, 2 tablets of *Qurs Kaknaj*, 5 gm of *Jawarish Zaruni*, and 20 ml of *Sharbat Bazuri Motadil* twice a day on empty stomach with plain water. The follow-up observation was 15 days and duration of study was 4 months. Efficacy of the drugs was assessed on the basis of subjective and objective parameters as shown in Table 4, Table 5A & Table 5B. All given Unani drugs were pharmacoepl and marketed by GMP certified Company, Hamdard, New Delhi prepared as per Bayaz-e-Kabir, Volume II.<sup>[22]</sup>

The ingredients of *Qurs Kaknaj* are *Aslussoos* (*Glycyrrhiza glabra*) (Rz.) (Pdr.) 49.5 mg., *Behdana* (*Cydonia oblonga*) (Sd.) (Pdr.) 49.5 mg., *Tukhm-e-Khubbazi* (*Malva sylvestris*) (Sd.) (Pdr.) 49.5 mg., *Tukhm-e-Khurfa* (*Portulaca oleracea*) (Sd.) (Pdr.) 49.5 mg., *Tukhm-e-Khashkhash* (*Papaver somniferum*) (Sd.) (Pdr.) 58.5 mg., *Tukhm Khatmi* (*Althaea officinalis*) (Sd.) (Pdr.) 49.5 mg., *Habb-e-Kaknaj* (*Physalis alkekengi*) (Fr.) (Pdr.) 99.0 mg., *Kateera* (*Cochlospermum religiosum*) (Gum) (Pdr.) 39.0 mg., *Gond Safaid* (*Acacia arabica*) (Gum) (Pdr.) 198.0 mg., *Maghz Kharbooza* (*Curcumi smelo*) (Kernel) (Pdr.) 69.0 mg., *Maghz-e-Kaddu* (*Cucurbita moschata*) (Kernel) (Pdr.) 69.0 mg., *Nishasta Gandum* (*Triticum sativum*) (Sd.) (Pdr.) 49.5 mg.<sup>[22]</sup>

The constituents of *Kushta Hajrul Yahood* are (Each 90 mg. contains) *Hajrul Yahood* (*Lapis lazuli*) 93.50 mg, *Shora Qalmi* (*Potassium nitrate*) 187.00 mg, *Aab-e-Turab* (*Rafanus sativus*) (Rt.) (Jce.) 1.496 gm.<sup>[22]</sup>

The ingredients of *Jawarish Zaruni* are (Each 5 g contains) *Tukum-e-Karafs* (*Apium Graveolens*) (Sd.) (Pdr.) 135.2 mg, *Tukum-e-Gazar* (*Daucus carota*) (Sd.) (Pdr.) 135.2 mg, *Tukum-e-Ispast*, (*Peganum Hemala*) (Sd.) (Pdr.) 135.2 mg, *Ajwain* (*Trachyspermum ammi*) (Sd.) (Pdr.) 135.2 mg, *Badyan* (*Foeniculum Vulgare*) (Sd.) (Pdr.) 135.2 mg, *Maghz Tukum Kharbooza* (*Cucumis melo*) (Sd.) (Pdr.) 135.2 mg, *Maghz Tukum Khyarain* (*Cucumis sativus*) (Sd.) (Pdr.) 135.2 mg, *Post-e-Beikh-e-Karafs* (*Apium graveolens*) (Rt. Brk.) (Pdr.) 135.2 mg, *Aqarqarha* (*Anacyclus pyrethrum*) (Rt.) (Pdr.) 42.0 mg, *Khurfa* (*Portulaca oleracea*) 42.0 mg, *Zafran*

(*Crocus sativus*) (Stg.) 42.0 mg, *Mastagi* (*Pistacia lentiscus*) (Rs.) (Pdr.) 42.0 mg, *Shahad* (honey) 3.75 g, Preservative: Sodium Benzoate.<sup>[22]</sup>

The ingredients of *Sharbat Buzoori Motadil* are (Each 25 ml. contains) Aqueous extract from *Tukhm-e-Kasni* (*Cichorium intybus*) (Sd.) (Ext.) 2.01 gm. *Tukhm-e-Kheera* (*Curcumis sativus*) (Sd.) (Ext.) 2.01 gm. *Tukhm-e-Kakdi* (*Curcumis sativus*) (Sd.) (Ext.) 2.01 gm. *Beikh-e-Badyan* (*Foeniculum vulgare*) (Rt.) (Ext.) 2.01 gm. *Tukhm-e-Kharbooza* (*Curcumis melo*) (Sd.) (Ext.) 2.01 gm. *Beikh-e-Kasni* (*Cichorium intybus*) (Rt.) (Ext.) 4.32 gm. *Qand-e-Safed* (Sugar) (Crystal) 24.2 gm.<sup>[22]</sup>

**Table 1: Personal Information.**

Age/Sex	36 yrs/Male
Religion	Islam
Education	Graduate
Mizaj (Temperament)	Damwi (Sanguine)
Marital Status	Married
Occupation	Service
Dietary Habits	Mixed
Water Intake	7-9 Glasses per day
Appetite	Normal
Nature of Work	Sedentary
Exercise	No
Emotional Status	Normal
Bowel Habits	Normal
Any Addiction	None
Medical History	Recurrent UTI
Surgical History	Not Related
Family History	Not Related

**Table 2: General Examination.**

Pulse Rate	76/min
Respiratory Rate	18/min
Heart Rate	76/min
Blood Pressure	110/78mm/Hg
Temperature	WNL
Pallor	Absent
Icterus	Absent

**Table 3: Investigations.**

Baseline	After Treatment	
Ultrasonography (USG) of Abdomen	10-12 Multiple Renal Calculi (3-4 mm) at lower end of left ureter	Normal Abdomen & Pelvis
<b>Differential Leukocyte Count</b>		
Neutrophils %	54	51
Lymphocytes %	37	39
Eosinophils %	05	06
Monocytes %	03	03
Basophils %	01	01
Total Leucocytes Count	9560	6070
Hemoglobin %	13.8	15.2

Fasting Blood Sugar	86	88
Post Prandial Blood Sugar	98	94
Blood Urea	24	22
Serum Creatinine	0.9	1.3
Serum Uric Acid	3.8	3.6
Serum Bilirubin	0.3	0.2
Bilirubin Direct	0.1	0.1
Bilirubin Total	0.2	0.1
SGOT	24	45
SGPT	26	32
Alkaline phosphate	56	60
Total Protein	6.1	6.2
Urine reaction	Acidic	Acidic

Table 4: Assessment Criteria.

Subjective Symptoms	Gradation			
	0	1	2	3
Pain in Flank	No pain	Bearable pain, medicines not require	Bearable pain and require oral medication	Unbearable pain
<i>Usr-ul- Bol</i> (Dysuria)	No dysuria	Occasional dysuria	Regularly medicine not require	Regular dysuria, require medication
<i>Bol-ud-Dam</i> (Hematuria)	No haematuria	Smoky colour urine	Black shine	Bright red colour
Turbid Urine	Crystal clear fluid	Faintly cloudy or smoke (turbidity barely visible)	Turbidity clearly present but newsprint easily read through test tube	Newsprint not easily read through test tube
<i>Kasrat-e-Bol</i> (Increased Frequency of Micturition)	Up to 6 times	7-9 times	10-12 times	>12 times
<b>Objective Symptoms</b>				
Size of Stone	No change	<5mm	5-10 mm	>10 mm
No of stone	No change	1 stone	2 stones	≥ 3 stones

Table 5A: Assessment of Subjective Symptoms.

Symptoms	Pre Treatment	Post Treatment
Pain in Flank	2	0
<i>Usrul Bol</i> (Dysuria)	3	0
<i>Bol-ud-Dam</i> (Hematuria)	1	0
Turbid Urine	3	0
<i>Kasrat-e-Bol</i> (Increased Frequency of Micturition)	3	0

Table 5B: Assessment of Objective Symptoms.

Symptoms	Before Treatment	After Treatment
Size of Stone	1	0
No of stone	3	0

## RESULTS AND DISCUSSION

The clinical improved response was excellent and significant after 15 days of treatment. Ultrasonography (USG) performed after 2 months, findings suggested as multiple (8-10) tiny calculi of size 3-4 mm in the calyces of left kidney and a calculus of sizes 3.5 mm at lower end of left ureter. Further USG performed after 4 months of treatment shown absence of any calculus in the left kidney (Figure 2A) and ureter (Figure 2B). All Unani pharmacopeal formulations were found to be safe, effective and to prevent urinary supersaturation of lithogenic substances. The beneficial actions of these

formulations can be attributed to the presence of complex spectrum of actions including litholytic and lithotriptic, diuretic, antispasmodic, anti-inflammatory activities in their ingredients.

*Qurs Kaknaj* has been described as diuretic (*Mudirr-e-Bol*), litholytic (*Mufattit-e-Hisat*), lithotriptic (*Mukhrij-e-Hisat*), renal and urinary bladder wound healer.<sup>[23]</sup> Its chief constituent *Habb-e-Kaknaj* (*Physalis alkekengi* fruit) is commonly used since ancient times in Unani Medicine as diuretic, lithotriptic, anti-inflammatory and nephroprotective.<sup>[24-25]</sup> It is investigated the main phytochemical constituents of *Physalis alkekengi* are alkaloids (Tropanes), flavonoids, sterols, fatty acids and amino acids.<sup>[26]</sup> The flavonoids are reported to have a role in analgesic action by targeting the prostaglandins and alkaloids are known for their ability to inhibit pain perception.<sup>[27]</sup> It also possesses antispasmodic activity

mainly via calcium influx blockade, partially through blocking  $\beta$ -adrenoceptors and nitric oxide synthesis.<sup>[28]</sup> *Kushta Hajrul Yahood* is useful as a diuretic and a lithotriptic.<sup>[24,29]</sup> It is specially given in pathological conditions of the urinary tract such as retention of urine, gonorrhoea and urethral ulcer.<sup>[24,29]</sup> *Kushta Hajrul Yahoodis* a rich source of Magnesium hydroxide [Mg(OH)<sub>2</sub>] which react with Calcium Oxalate Calculus and forms Magnesium oxalate soluble complex.<sup>[30]</sup> This process helps disintegration of large calculi into the smaller particles. *Aab-e-Turab* (Rafanus sativus root juice) demonstrated for its anti-urolithiatic and diuretic activities.<sup>[31]</sup>

*Jawarish Zaruni* has been described as diuretic, kidney tonic and nephron-protective, useful in burning micturition, nephritis and nephrotic syndrome like condition. It is investigated as diuretic, by striking increase in total urine output over a period of 6 hours, and increase in excretion of sodium and potassium significantly. It is also investigated that it produced remarkable nephron-protective effect against gentamicin-induced nephrotoxicity.<sup>[32]</sup>

*Sharbat Buzuri Moatadil* mainly indicated as diuretic (*Mudirr-e-Bol*).<sup>[23]</sup> It is claimed to have an anti-urolithiatic agent. It can prevent the recurrence stone formation by forming soluble calcium compound with citric acid. It also has alkalizing effect.<sup>[33]</sup> Its chief ingredient *Beikh-e-Kasni* (Cichorium intybus root) possesses anti-inflammatory and nephroprotective activities.<sup>[33-34]</sup> It is reported the ethyl acetate extract of Cichorium intybus roots produced inhibition of prostaglandin E<sub>2</sub> (PGE<sub>2</sub>) production in human colon carcinoma HT29 cells by inhibition of expression of cyclooxygenase-2 (COX-2) and direct inhibition of COX enzyme activity.<sup>[20]</sup> The ameliorative effect of ethanolic extract of Cichorium intybus was investigated using cisplatin induced nephrotoxicity on rats. The extract was found to reduce nephrotoxicity with no sign of toxicity.<sup>[35]</sup> *Tukhm-e-kheera* (Cucumis sativus) shown to have anti-urolithiatic activity by hastening the process of dissolving the stones in kidney. It prevents oxalate induced lipid peroxidation and causes regeneration of renal epithelium.<sup>[36-38]</sup>

## CONCLUSION

The present study shows that Unani Pharmacopeal Drugs; *Qurs Kaknaj*, *Qurs Kushta Hajrul Yahood*, *Jawarish Zaruni* and *Sharbat Buzoori Motadil* are safe and effective in the treatment of *Hisat-e-Kulyah* (Renal Stone) as these de-crystallizes and helps in expulsion of ureteric stone faster with symptomatic relief. Hence, these Unani formulations can be useful in *Hisat-e-Kulyah* (Renal stone) and *Hisat-e-Halib* (ureteric calculus) as alternative therapy to avoid surgery.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest

## ABBREVIATIONS

Rz. = Rhizome, Pdr. = Powder, mg. = Milligram, Sd. = Seed, Fr. = Fruit, Rt. = Root, Jce. = Juice, gm. = Gram, Brk. = Bark, Stg. = Stigmas, Rs. = Resins, Ext. = Extract.

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