

MANAGEMENT OF *HASĀH WA RAML AL-KULYA* (NEPHROLITHIASIS) IN UNANI SYSTEM OF MEDICINE: A REVIEW

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ABSTRACT

The kidneys are exposed to toxicants and waste product and can be affected easily by these toxicants and by products of the metabolism. The consumption of adequate water is necessary to remove waste and to keep kidney healthy. Deficiency of liquid in the blood leads to various adverse effects on the kidney. The most common adverse deficiency of liquid in blood is deposition of solid matter in the kidney and subsequently formation of kidney stone. Nephrolithiasis (kidney stone) can be treated by drugs if it is small in size but if it blocks the route due to its big size then surgery is the only way to remove it. The recurrence rate of the problem is very high and it may reappear within 10 years. In Unani literature *Hasāh wa Raml al-Kulya* (nephrolithiasis) is described in detail. As per Unani literature stagnation of *Ghaliz mādda* (filthy and viscous matter) in the kidney is the main cause of the formation of kidney stone. Various single and compound formulations drugs are described for the management of kidney stone which are very effective as well as safe. Management is divided into two parts i.e. symptomatic treatment to relieve pain and to methods adopted to remove stone from the kidney. *Musakkin-i-Waja'* (analgesic) drugs are used for pain while *Mufattit-i-Hasāh* (lithotriptic) and *Mudirr-i-Bawl* (Diuretic) drugs are used to remove stone. *Majoon Aqrab*, *Qurs Kaknaj* and *Dawa-e-Gurda* etc. are compound drugs mentioned in literature for removal of kidney stone. Single drugs like *Alu Balu*, *Tukhm Khayar*, and *Kharkhask* etc. are also used for same purpose.

Keywords Cystolithiasis, *Hasah wa Raml*, Jarahat, Nephrolithiasis, Unani

1. INTRODUCTION

Kidneys remove waste products and fluid from the body after filtering the blood through urine to maintain homeostasis in the body. Sometimes concentration of certain waste products increase and body is not able to filter it due to lack of fluid or some other disease conditions. In this situation the deposition of waste product increases in the kidney and a stone is formed. There are several reasons for formation of stone in the body. Kidney stones are one of the most common as well as most painful urologic problems. Calcium oxalate and/or phosphate stones account for almost 70% of all renal stones in developed countries (Sofia, 2016).

Kidney stones are usually affect people who are between 30 and 60 years of age. Renal colic (severe pain caused by a kidney stone) affects about 10-20% of men, and 3-5% of women. Its recurrence rate is also very high $\geq 30\%$ within 10 years. In India, 12% of the population is expected to have urinary stones, out of which 50% may end up with loss of kidneys or renal damage. Recurrent stone formation is a common problem with all types

of stones and therefore an important part of the medical care of patients with stone disease (Sofia, 2016; Rule, 2014; Lieske, 2006; Cheungpasitporn, 2015; Shah, 2002).

The incidence of kidney stones is globally increasing with an estimated prevalence ranging up to 15% during lifetime; approximately 7% of women and 13% of men will develop a kidney stone (Long, 2007; Lopez, 2010). High incidence of renal calculi may be due to climate changes, diet habits, local geology of that country low intake of fluid, dehydration, rising global temperatures etc. The researchers also suggested that person having kidney stone had a 60% greater risk of developing chronic kidney disease (CKD). Diet and fluid intake may be important factors in the development of urinary stones. An increase in saturated & unsaturated fatty acid, animal protein, animal protein intake, sugar and decrease in dietary fiber, vegetable protein, potassium intake, unrefined carbohydrates and low fluid intake are high risk of stone formation (Sofia, 2016).

2. UNANI SYSTEM OF MEDICINE AND *HASĀH WA RAML AL-KULYA* (NEPHROLITHIASIS)

According to Unani physicians the types and causes of renal and urinary bladder calculus are same. *Hasāh wa Raml al-Kulya* (nephrolithiasis) is caused by the retention of viscous humour like *Balgham* (phlegm), *Ghaliz Dam* (thick blood) and *Rem*

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(deranged matter) inside the kidneys and hence their transformation into calculus due to the innate heat of kidneys in due course of time (Sofia, 2016). Innate heat evaporates the moistness of the *khilt* (humor) and it becomes dry and filthy and after a period of time converts into the stone due to dominant heat. *Reg* or *Raml* (sandy matter) is produced when the *mādda* (active substance) is not excessively filthy and viscous. *Quwwat Dāfi'a* (expulsive faculty) keeps releasing little bit of it constantly with ease and not enough is left in the body to become stone. The stone is formed when the *mādda* (active substance) is more filthy and viscous which is caught in the cavities of the kidney and does not release from there and become stagnant. This *mādda* (active substance) is slightly increased and eventually transform into stone over a period of time (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzānī, 1992).

3. ETIOPATHOGENESIS OF *HASĀH WA RAML AL-KULYA* (NEPHROLITHIASIS)

According to Ibn Sina two things are essential for the production of stone in the kidney e.g. *Ghaliz mādda* (filthy and viscous matter) and its stagnation in the kidney. *Ghaliz mādda* (filthy and viscous matter) is produced by *Ghaliz ghiza* (viscous and heavy diets) e.g. condensed milk, paneer (cheese), beef meat, big fishes, roasted meat of all type, rice & milk, *kheer* (rice pudding), *māida* (white flour), *siwayyen* (vermicelli milk pudding), *halwa*, dry fruits, *lesdaar ata* (mucilaginous flour). Sometimes the active substance of stone is small sand like matter. Stagnation of *mādda* (active substance) in kidney is due to several reasons like *Zu'fal-Kulya* (weakness of kidney), *Waram al-Kulya* (nephritis), *Qurūh al-Kulya* (ulcers of kidney etc. According to *Jalinoos* (Galen) stone is formed by the *Qurūh* (ulcer) when pus is not evacuated and it gets accumulated in the kidney and transform into the stone (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzani, 1992).

Nature of formation of stone is same for kidney and urinary bladder and does not depend on matter and type of stone. In physiological and pathological conditions, the matters that have to be excreted from the kidney and urinary bladder become thick due to various reasons. The water contents help them to remain in liquid form but when water content reduced in quantity then these matters deposit in the kidney and transformed into kidney stone. If size is large then it is called calculi or else called reg. Depositions of different components make a stone and arranged in layers but in some peoples only one component dominates other. The nidus of the stone is made up of *Balgham* (phlegm), *Dam* (blood) or *Rutūbat Baydiyya* (white deranged matters) and these are produced in response to *Waram al-Nazlī* (inflammation due to phlegm) and *Imtilā' Damwi* (congestion due to blood). It is also caused by some diseases like *Niqris* (gout) and gastrointestinal disturbance in old age people, due to excessive consumption of meat and doing heavy exercise in young people. It is common in some region of India, like central India. It is also common in people using *Thaqīl wa Ghaliz* water (water having high mineral contents). The excessive use of *Gajar* (*Daucus carota* L.), *Shalgham* (*Brassica napus* L. var. *dichotoma* Roxb.) and leafy vegetables also cause stone of type three (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzani, 1992).

Stone is usually formed when digestive processes related to nutrition of the body got impaired. The precipitating causes are

- Sedentary life style.
- Low intake of water and liquid.
- High consumption of meat and sweet diet.

- Liver dysfunction.
- Kidney dysfunction.
- Indigestion
- Urinary bladder diseases (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzani, 1992).

4. TYPES OF CALCULI

4.1 According to Unani medicine calculi are classified according to colour, weight, density, shape & size and texture of surface; the most common types are as follow (Nafis, 1439).

- **Hasāh Bawliya** (Uric acid stone): shape is circular or oval, texture is rough or granular and weight. Colour is reddish or yellowish brown. When sliced circular ring seen. Its size varies from very small like poppy seed to big size, sometimes more than one are present at a time. It is formed in acidic urine when acidity of urine increases above the normal value.
- **Hasāh Layyina** (Soft stone): This type of calculi is soft and of moderate size.
- **Hasāh Tūf** (mulberry shape stone): Calculi are hard, blackish brown in colour, and resemble mulberry fruit. It is smooth, round, grey or brown when small. Usually it is only one in number.
- **Hasāh Dhūbāniya** (stone that can be melted): it can be melted by specific method that's why given the name. It is formed in basic urine and in Urinary bladder it increases in size and become very big in size. It is white, soft and brittle.
- **Hasāh Qimoliyawi**: It is white like chalk, and soft surface, easily broken like clay. Size varies from pea up to hen's egg.

4.2 According to modern conventional medicine there are four main types of kidney stones (Anonymous 2020a; Anonymous 2020b).

- **Calcium stone**: Calcium stones are the most common about 56-61% incidence. They are made up of calcium oxalate but can consist of calcium phosphate.
- **Uric acid stone**: It is second most common type of kidney stone about 9-17% incidence. Uric acid can form stones by itself or with calcium. Food materials having purines like organ meats and shellfish may precipitate the formation of this type of stone.
- **Struvite stone**: These stones are less common about 2-4% and are generally caused by infections. Struvite stones are made of magnesium, ammonium and phosphate.
- **Cystine stone**: These stones are rare about 1% incidence and made up of cystine.

5. SIGN & SYMPTOMS OF *HASĀH WA RAML AL-KULYA* (NEPHROLITHIASIS)

Heaviness and stress is felt at waist especially when patient bent forward if stone is in the kidney. In case of stagnation of stool in large intestine the patient feels pain at the site of kidney. Pain may be felt in glans penis, scrotum and thigh region of the same

side of the affected kidney. Lumber pain due to stone is mild in nature but exaggerate with physical exercise, like horse riding, running, jumping, and walking. Presence of *Rutūbat Baydiyya* (white deranged matter) and blood may be present in the urine and frequency of micturition increases. If inflammation occurs or wound formation took place due to irritation caused by stone then intensity of the pain increases and pus appears in urine. Fever with chills may be present. When stone increases in size it destroy normal shape and size of the kidney or it converts into a bag like pouch and pus formation started in it (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzani, 1992).

There are episodes of severe pain which may last for month to years. These episodes of pain occur when stone moved from kidney to the ureter and stuck there. In this case patients feel severe pain which radiate towards scrotum, testes, glans penis and thigh of the same side. Scrotum gets swollen and pain occurs when pressed. Dribbling of urine with burning micturition may be present and sweating occurs due to severe pain, vomiting may also be present. The body temperature becomes low, *Nabz* (pulse) become *Saghir* (irregular slow), and *Ghashi* (syncope) may be present. When stone completely moved to the urinary bladder the pain subsides but heaviness may be present for few days. According to Ibn Sīnā the sign of movement of stone is radiation of pain from back towards thigh, when pain subsides it means it reaches the urinary bladder. In some cases the stone remain in kidney for years without any sign and symptoms. Complication of the kidney stone includes *Waram al-Kulya* (nephritis), *Huzāl al-Kulya* (renal atrophy), *Tasammum Bawlī* (uremia), *Sal'a Khabītha* (arcinoma of kidney) and *Ihtibās al-Bawl* (retention of urine) (Arzani, 1992; Kabir, 2007; Kabir, 1955; Ghani, 2011).

6. MANAGEMENT OF *HASĀH WA RAML AL-KULYA* (NEPHROLITHIASIS)

Management of kidney stone is divided into two parts, during the episode of pain and during the period when no pain is present to remove stone (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzani, 1992).

6.1 Management of pain

Ābzan (Sitz bath), hot *Zimad* (paste) application, hot *Kimad* (fomentation), *Mukhaddir Zimad* (anesthetic paste) may be used for pain management. *Mukhaddir* (anesthetic) drugs have dual actions; it relives pain and also dilates the urethral route. *Fasḍ* (venesection) of *Warīd-i-Bāsaliq* (basilic vein) is recommended if *Ghalba Dam* (dominance of blood) is present in the body. If *Qabz* (constipation) is present then *Murkhī* (relaxant) and *Mudir* (diuretics) *Huqna* (enema) may be used to remove the stagnant stool in the rectum.

Ābzan (Sitz bath) with *Joshānda* (decoction) of following drugs is recommended i.e. *Gokhru* (*Tribulus terrestris* L.), *Babuna* (*Matricaria chamomilla* L.), *Khatmi* (*Althea officinalis* L.), *Soya* (*Anethum sowa* L.), *Karafs* (*Apium graveolens* L.), *Karamkalla* (*Brassica oleracea* L.), *Parsioshan* (*Adiantum capillus-veneris* L.), *Ratba* (*Trifolium alexandrinum* L.), *Methi* (*Trigonella foenum-graecum* L.), *Kad* (*Carthamus tinctorium* L.), *Beikh Kibr* (*Capparis spinosa* L.), *Berg Aspagol* (leaves of *Plantago ovate* L.), *Khurfa* (*Portulaca oleracea* L.), *Banafsha* (*Viola odorata* L.), *Berg Kunjud* (leaves of *Sesamum indicum* L.). The remaining solid part of these drugs after straining may be applied on waist and thigh as *Zimad* (paste) and is very useful. After *Ābzan* (Sitz bath) local application of *Roghan Kheri* (oil of *Sida rhombifolia* L.), *Roghan Soya* (oil of *Anethum sowa* L.) and *Roghan Banafsha* (oil of *Viola odorata* L.) may be applied on the lower back.

If stone is struck in ureter or urethra then *Huqna* (enema) with drugs having *Lu'āb* (mucilage) may be applied e.g. *Lu'āb Khatmi* (mucilage of *Althea officinalis* L.), *Lu'āb Alsi* (mucilage of *Linum utitattissimum* L.), *Lu'āb Methi* (*Trigonella foenum-graecum* L.) with *Roghan Qust* (oil of *Saussurea lappa* C.B. Clarke.). *Roghan Badam* (almond oil) with *Maghz Amaltas* (*Cassia fistula* L.) may be consumed for same purpose. If stone is struck in *Ihlīl* (urethra) then oil jet or water jet may be used to remove the stone from the urethra. Massage from above downward is advised at the site of urethra. If pain worsens during these treatments then compound formulation having *Afun* (opium) like *Aflonia* and *Barshasha* may be taken. If all treatment fails then surgery is advised to remove stone.

For management of pain following methods and drugs may be used i.e. Local application of *Arq Ajeeb* (liquid formulation) 5 ml mixed with vinegar 20 ml may be effective. Tikor (hot fomentation) by decoction of Post *Khaskhash* (fruit rind of *Papaver somniferum* L.) in *Arq Gulab* (distillate of *Rosa damascena* Mill.) is recommended. Local hot fomentation by putting *Sabus Gandum* (wheat husk) and *Namak Taom* (table salt) in equal quantity in a small cotton pouch and repeated application of this pouch by heating it on frying pan is advised. Apply locally *Roti* (bread) made up of white lentil on the waist while warm.

Nutūl (irrigation) may be used in this condition by following methods using appropriate drugs mentioned here i.e. *Gul-i Tesu* (flower of *Butea monosperma*), *Tukhm Khayaren* (seeds of *Cucumis sativus* L. & *Cucumis utilissimus* Roxb.) *Tukhm Kharbuza* (seeds of *Cucumis melo* L.) boils in water and strains it and use warm for irrigation. The other combination for the same purpose is here i.e. *Gul-i Tesu* (flower of *Butea monosperma*), *Parsioshan* (*Adiantum capillus-veneris* L.), *Tukhm Kharbuza* (seeds of *Cucumis melo* L.), *Tukhm Soya* (*Anethum sowa* L.), *Habbul Qillat* (*Dolichos biflorus* L.), *Gul-i Aakh* (*Calotropis gigantea* L.) boils in water and strain it and use warm for irrigation. The remaining solid part may be applied on affected part (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzani, 1992).

6.2 Management for removal of renal stone

Food materials which may precipitate stone formation may be stopped or should be reduced in quantities. For this purpose *Ghaliz ghiza* (heavy food items) like milk, meat of beef, meat of goat & camel, bread made up of *maida* (white flour), half cooked bread, *haleem* (diet made up of meat and pulses), dry fruits, fruits like apple, peach and guava etc. should be avoided. Moderate diet like simple curry made up of chick's meat, baby goat meat, chickpea diet with *Kaddu* (*Cucurbita maxima* Duch.) and *Khera* (*Cucumis sativus* L.) may be useful. Try to correct digestion by appropriate methods or suitable drugs. Light exercise and walking is advised in empty stomach. Induce vomiting to remove *Ghaliz madda* (heavy matter) produced by heavy diet if required. Light *Mushīl* (purgative) like *Joshanda Sapistan* (*Cocordia latifolia* Roxb.), *Anjeer* (*Ficus carica* L.), *Mulethi* (*Glycyrrhiza glabra* L.), and *Khatmi* (*Althea officinalis* L.) with *Maghz Amaltas* (*Cassia fistula* L.) may be used to remove constipation.

Use of *Mudirr-i-Bawl* (diuretic) drugs having low heat like *Tukhm Khayaren* (kernel of seeds of *Cucumis sativus* L. & *Cucumis utilissimus* Roxb.), *Tukhm Kaddu* (kernel of seeds of *Cucurbita maxima* Duch), *Tukhm Halyun* (seeds of *Asparagus officinalis* L.), *Kaknaj* (*Physalis alkekengi* L.), *Gokhru* (*Tribulus terrestris* L.) and *Parsioshan* (*Adiantum capillus-veneris* L.) is recommended. After that *Mufattit-i-Hasāh* (lithotriptic) *Majoon* (semisolid formulation) and *Qurs* (tablets) having following drugs may be used to break stone e.g. *Gokhru* (*Tribulus terrestris*

L.), *Karafs* (*Apium graveolens* L.), *Pudina* (*Mentha arvensis* L.), *Afsanteen* (*Artemisia absinthium* L.), *Beikh Halyun* (root of *Asparagus officinalis* L.), *Beikh Ghar* (root of *Laurus nobilis* L.), *Beikh Kaknaj* (root of *Physalis alkekengi* L.), *Beikh Badiyan* (root of *Foeniculum vulgare Gaertn*), *Suddab* (*Ruta graveolens* L.), *Tukhm Khayar* (seeds of *Cucumis utilissimus* Roxb.) and *Parsioshan* (*Adiantum capillus-veneris* L.).

Mix *Hajrul Yahood* (a stone made up of silicate of lime) 1 gm with *Sang Sarmahi* (Stone of the heads of fish) 1 gm and consume it with *Jawarish Zarooni* (semisolid compound formulation). Mix *Shora Qalmi* (potassium nitrate) 1 gm with *Jawakhar* (salt obtained from burnt *Hordeum vulgare* L.) 1 gm and consume it with *Jawarish Kamooni* (semisolid compound formulation) and *Sharbat Bazuri* (syrup compound formulation) in the morning. *Majoon Aqrab* (semisolid compound formulation) with *Sharbat Bazuri* (syrup compound formulation)

may be used. *Sikanjabīn Unsuli* (a liquid preparation having onion, vinegar and sugar) is also recommended.

Most common type of stone is *Hasāh Bawliya* and it is formed in acidic environment so try to decrease acidity of urine by appropriate diet and drugs. Stop using meat, eggs and fish in diet and increase the intake of vegetables in diet. *Jawakhar* (salt obtained from burnt *Hordeum vulgare* L.) and *Shora Qalmi* (Potassium nitrate) are useful to decrease acidity of urine. Walking and light exercise may be continued. Alcohol consumption is prohibited, constipation may be avoided and plenty of water should be taken. If stone is small in size, it may be removed by these drugs and methods but in some cases where the size is much larger and drugs did not respond then surgery is advised (Nafis, 1439; Khan, 1987; Ibn Sīnā (980-1037); Arzānī, 1924; Arzani, 1992).

Table.1 Single drugs used in *Hasāh wa Raml al-Kulya* (Nephrolithiasis) and their pharmacological actions as per Unani System of Medicine

Unani name	Botanical/scientific Name	Unani pharmacological actions
<i>Alu Balu</i>	<i>Prunus cerasus</i> L.	<i>Mufattit-i-Hasāh</i> (lithotriptic), <i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Aspand</i>	<i>Peganum harmala</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Duqu</i>	<i>Peucedanum grande</i> CL.	<i>Mufattit-i-Hasāh</i> (lithotriptic), <i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Habbul Qillat</i>	<i>Dolichos biflorus</i> L.	<i>Mufattit-i-Hasāh</i> (lithotriptic), <i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Izkhar</i>	<i>Cymbopogon jawarancusa</i> Schutt.	<i>Mufattit-i-Hasāh</i> (lithotriptic), <i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Juntiyana</i>	<i>Gentiana kurro</i> Royle	<i>Mudirr-i-Bawl</i> (Diuretic)
<i>Kaknaj</i>	<i>Physalis alkekengi</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Kharkhask</i>	<i>Tribulus terrestris</i> L.	<i>Mufattit-i-Hasāh</i> (lithotriptic), <i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Tukhm Karafs</i>	<i>Apium graveolens</i> L.	<i>Mufattit-i-Hasāh</i> (lithotriptic), <i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Tukhm Kharpaza</i>	<i>Cucumis melo</i> L.	<i>Mufattit-i-Hasāh</i> (lithotriptic) (13,14,15) <i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Tukhm Khayar</i>	<i>Cucumis sativus</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 1955; Ghani, 2011)
<i>Tukhm Khayarza</i>	<i>Cucumis utilissimus</i> Roxb	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 1955; Ghani, 2011)
<i>Tukhm Khurfa</i>	<i>Portulaca oleracea</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 1955; Ghani, 2011)
<i>Tukhm Turab</i>	<i>Raphanus sativus</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Waj Turki</i>	<i>Acorus calamus</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Sahajna</i>	<i>Moringa oleifera</i> Lam.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 1955; Ghani, 2011)
<i>Chirchitta</i>	<i>Achyranthes aspera</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 1955; Ghani, 2011)
<i>Doob Ghas</i>	<i>Cynodon dactylon</i> L.	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 1955; Ghani, 2011)
<i>Aqrab</i>	Scorpion	<i>Mufattit-i-Hasāh</i> (lithotriptic) (Kabir, 1955; Ghani, 2011)
<i>Shora Qalmi</i>	Potassium Nitrate (Pure)	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)
<i>Naushadar</i>	Ammonium Chloride	<i>Mudirr-i-Bawl</i> (Diuretic) (Kabir, 2007; Kabir, 1955; Ghani, 2011)

6.3 Single drugs used in *Hasāh wa Raml al-Kulya* (Nephrolithiasis)

Various single drugs summarized in Table 1 have been used to treat nephrolithiasis and produce their action directly or indirectly. These drugs have two types of action e.g. *Mudirr-i-Bawl* (Diuretic) and *Mufattit-i-Hasāh* (lithotriptic). If a stone is small in size then only *Mudirr-i-Bawl* (Diuretic) drugs are sufficient to remove these stone whereas in case of big stone *Mufattit-i-Hasāh* (lithotriptic) drugs are required to decrease the size of stone. After achieving the size reduction *Mudirr-i-Bawl* (Diuretic) have been used to remove stone and other small particle which may precipitate to form stone. Few drugs have both type of action while some drugs have only one of the two actions. The single drugs generally obtained from natural sources, mostly from plants; because of this they do not have any severe adverse effects (Kabir, 2007; Kabir, 1955; Ghani, 2011).

Mufattit-i-Hasāh (lithotriptic) is an agent that breaks down calculi. In Unani Medicine some drugs are described in literature which breaks down the stone or reduce its size. Although the exact mechanism of this action is not clear but these types of medicines are used since long times and still being used by Unani physician and have shown very good results. Most of the medicines are also mentioned in National formulary of Unani medicines (NFUM). The stone bigger than 5 mm size cannot be removed from the kidney by diuresis alone and the effort should be made to reduce the size of stone or to break it into smaller pieces which may be excreted easily through urine. Lithotriptic medicine may be used only when the size of stone is bigger than 5 mm otherwise only diuretic medicines are sufficient to remove kidney stones. The combination of lithotriptic and diuretic drugs is recommended and found very effective for the removal of bigger stone (Ibn Sīnā (980-1037); Anonymous, 2011).

Mudirr-i-Bawl (diuretic) is an agent that increases the excretion of urine. The concept of diuresis is comprehensive in Unani medicine. It is mentioned that diuretic medicines increase the overall function of the kidney and does not allow deposition of the earthy matters in the kidney. It also clears the deposited material in kidney and improves functioning of the kidney without causing an electrolyte imbalance. These drugs also provide energy and various nutrients to the kidney because most of them have nutrients. If the size of stone is less than 5 mm than the use of diuretic drugs alone is sufficient for removal of the stone from the kidney (Ibn Sīnā (980-1037); Anonymous, 2011).

6.4 Compound formulations used in *Hasāh wa Raml al-Kulya* (Nephrolithiasis)

Apart from single drugs different compound formulations have also been described in Unani literature that can be used as readymade medicine and have *Mudirr-i-Bawl* (Diuretic) and *Mufattit-i-Hasāh* (lithotriptic) actions. These formulations have primary indication as lithotriptic or diuretic and generally used by Unani physicians to treat kidney stone (Anonymous, 2006a; Anonymous, 2007; Anonymous, 2006b; Anonymous, 2011).

- *Banadiql Bazoar* (Tablets)
- *Barshahsa* (semisolid formulation)
- *Jawarish Zarooni Sada* (semisolid formulation)
- *Majoon Aqrab* (semisolid formulation)
- *Majoon Hajrul Yahoood* (semisolid formulation)
- *Majoon Kaknaj* (semisolid formulation)
- *Qurs Kaknaj* (Tablets)
- *Safuf Hajrul Yahoood* (Powder)
- *Sharbat Bazuri Motadil* (Syrup)
- *Sikanjabeen Sada* (Syrup)

- *Dawa-e-Gurda* (semisolid formulation)

CONCLUSION

In Unani System of Medicine natural drugs have been used for maintenance and management of health. The natural drugs get digested and absorbed easily in the body and have little or no side effects. The management of any disease should be started according to the *Mizāj* (temperament) of the disease and drugs. The Unani system of Medicine treat whole body as a unit and so is holistic, it encompasses overall physical, mental and spiritual aspects of the body. The basic fundamentals, diagnosis and management of the Unani are based on scientific principles. The single drugs and combination therapy having more than one drug are used for the treatment of the disease. The management of *Hasāh wa Raml al-Kulya* (Nephrolithiasis) in Unani is given in detail which is safe and effective as it is based on natural products.

In modern system of medicine opioids class analgesic are used to relieve episodes of pain. Codeine, Acetaminophen and Tramadol are commonly used to manage the episodes of pain. Opioids analgesics have so many side effects like dizziness, headache, drowsiness, nausea and vomiting, constipation, lack of energy, sweating and dry mouth. Withdrawal symptoms also occur if these medicines are used for longer periods. Antispasmodics drugs are used to facilitate stone passage and for this purpose alpha blocker like Doxazosin is commonly used. Alpha blockers have several side effects like Sudden drops in blood pressure when sitting up or standing up, headaches or nausea, swollen legs or ankles, tiredness, weakness or feeling lethargic, sleep disturbance, tremor, rash or itchiness of the skin, weight gain and dizziness etc. It is not safe to use these medicines due to their side effects.

Unani medicine can provide safe and effective alternate option because it has vast literature and detail description of the nephrolithiasis. Management of kidney stone with Unani drugs have many edges over the conventional treatment. Being the natural drugs the side effects are either nil or minimal and these drugs are easily digested and metabolized by the body. Unani diuretics have holistic action and increase the urine formation and excretion thus minimizing the possibility of stagnation of earthy material in kidney tissues. These diuretics contains dietary element which strengthen the kidney by providing energy and other micronutrients. The concept of *Mufattit-i-Hasāh* (lithotriptic) is unique to Unani medicine and validated by several sources. The breaking of stone or dissolving the stone to reduce its size is the main action of lithotriptic drugs. In view of the above findings and discussion it may be concluded that management of *Hasāh wa Raml al-Kulya* (nephrolithiasis) through Unani medicine is best option available at present. The removal of kidney stone without any side effect with the help of natural drugs is the fundamental principle of Unani Medicine.

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CONFLICT OF INTEREST

Authors have no conflict of interest to declare.

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