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Shora Qalmi (Potassium Nitrate): A beneficial mineral origin drug of Unani Medicine

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Abstract

Shora Qalmi (potassium nitrate) is an alkali mineral composed of potassium ions (K^+) and nitrate ions (NO_3^-) having a sour taste. It is white shiny colored, odorless and has a hexagonal crystal like, structure. It gives cooling sensation when put on tongue. In Unani Medicine it is used in the form of powder or in countless compound formulations since long time for the treatment of various illnesses including retention of urine, ulcers of urinary tract, hepatomegaly, splenomegaly, pruritus, fever, gout etc. It is also used as a food preservative and an additive in some toothpaste to help with tooth sensitivity. In present review, Unani classical literature was searched for its complete description viz. temperament, therapeutic actions, dosage, uses, and compound formulations along with pharmacological studies.

Keywords: *Shora Qalmi*, Unani medicine, Mineral drug, Retention of Urine, UTI, Ulceration.

INTRODUCTION

Unani Medicine was introduced in India during the 8th century AD by the Arabs and soon it took firm roots in the soil. This system is based on the Hippocratic theory of four humours. According to the humoral theory of Unani Medicine, blood is considered as a mixture of all humours i.e., *Dam* (sanguine), *Balgham* (phlegm), *Safra* (yellow bile) and *Sawda* (black bile) (Israili AH, 1981). Every person has a unique humoral constitution, which represents his healthy state. To maintain correct humoral balance, there is a power of self-preservation or adjustment called *mediatrix naturae* (*Tabī'at Mudabbira Badan*) in the body. If this power weakens, imbalance in the humoral composition is bound to occur and this causes disease. The medicines used in this system, in fact, help the body regain this power to an optimum level and thereby restore humoral balance, thus retaining health. (Rahman R, 2016) Unani system of medicine has a detailed description of drugs that are utilized in many diseases. *Shora Qalmi* is one of the mineral origin drugs commonly known as salt petri in English, which is derived from the Latin word *sal petra* and *sal petrae* meaning “salt of the rock”. Knowledge of *Shora Qalmi* extends back to the earliest times of recorded history. (Lewis WC 1989) Sumerian writings from about 2200 or 2100 B.C. refer not only to salt peter but also to black salt peter, suggesting that refining of this material was already accomplished. Alchemists in Europe had knowledge of salt peter in the first century B.C. (Whisonant RC, 2001) Salt petre has been known as a raw material for gunpowder in various parts of the world since the 13th century. (Myers RL, 2007) Chinese workers mixed it with other ingredients to make fireworks in the seventh century C.E. and military explosives in the tenth century. The first modern book on mining and metallurgy, *De re metallica*, in 1556 described the extraction and refining of salt peter in great detail. (Whisonant RC, 2001)

Shora Qalmi (potassium nitrate) is found in impure state as a white material deposited on the surface of rocks. It is formed on the surface of the soil where feces, urine, and decaying plants react with moisture to form nitrates. These nitrates dissolve in rainwater, and after evaporation white deposits of potassium nitrate are left behind. (Encyclopedia Britannica)

The Dutch East India Company's interest in salt petre promoted Bihar to become a prominent *salt petre* extracting and refining region. Freshly extracted *salt petre* in Bihar was 80% pure, which could be refined to 95% purity.⁴ Today *salt petre* is one of the top 100 chemical compounds of the world. Incidentally, it was also used as a ‘food preservative’ and fertilizer in crop husbandry. (Myers RL, 2007) Whitelaw Ainslie author of the *Materia Medica of Hindustan* (1813) refers to salt petre as a material extensively used in traditional Indian medical practice. (Rajesh K, 2014)

MATERIALS AND METHODS

All materials available on printed, electronic and online were used to prepare this review. For its description, identification, temperament, pharmacological investigations, actions, therapeutic uses etc. both modern, Unani books were consulted and published articles and research papers were searched from PubMed, Google scholar, Science direct, Scopus etc. The detail about the substance was searched by names *Shora Qalmi*, *Salt petre*, potassium nitrate, nitrate, nitrate of potash, purified nitrate and *Cha Khar*.²⁶ Unani and

other books, 15 research papers and 02 websites up to 2022 were consulted for this review. Appropriate Unani terminologies were adapted from the Standard Unani Medical Terminology published by Central Council for Research in Unani System of Medicine in collaboration with the World Health Organization.

Mutaradifat (vernacular names):

Arabic:	<i>Thalaj Sini</i> (Baytar I, 1985, Ashraf HM, 2011)
Bengali:	<i>Sorma</i> (Kabiruddin M, 2014)
English:	Chinese Snow, Salt petri, Potassium nitrate, Nitre, Nitrate of Potash, Purified Nitre (Nadkarni DKM, 1982, Vohra & Athar 2008)
Greek:	<i>Nitron</i> (Turner WES, 1956)
Gujrati:	<i>Shora Khar</i> (Kabiruddin M, 2014)
Hindi:	<i>Cha Khar</i> (Kabiruddin M, 2014), <i>Shora Qalmi</i> , <i>Shora</i> (Khan MA, 2014)
Hebrew:	<i>Neter</i> (Turner WES, 1956)
Latin:	<i>Nitrum</i> (Turner WES, 1956)
Panjabi:	<i>Shora</i> (Kabiruddin M, 2014)
Persian:	<i>Abqar</i> , <i>Ibqar</i> , <i>Namak Shor Chini</i> (AbdulHakeem M, 2011), <i>Shoraba</i> , <i>Shore</i> (Nadkarni DKM, 1982), <i>Shora</i> (Khan MA, 2014)
Sanskrit:	<i>Sorak</i> (Ali A, 2004)
Suriyani:	<i>Albutās</i> (Rafiquddin HM, 1985)
Tamil:	<i>Pottil-uppu</i> (Ali A, 2004, Nadkarni DKM, 1982)
Unani:	<i>Āsios</i> , <i>Asios</i> (Baytar I, 1985)

Wajah Tasmiya (nomenclature):

The term ‘salt petre’ develops from the Medieval Latin terms *Sal petra* and *Sal petrae*. *Petros*, in ancient Greek, meant rock, stone. *Salt petre* therefore means ‘salt of the rock’. Egyptians referred to salt petre as *Ntr*. In Biblical Hebrew it was *Neter*. These usages refer to ‘soda’, which could be either Na_2CO_3 or NaHCO_3 , since *Nitron* (Greek) and *Nitrum* (Latin) have been used interchangeably for soda and *salt petre*, which, at that point of time, were not recognized as different materials. (Turner WES, 1956) The term *Shora Qalmi* is the combination of two Hindi words, *Shora* means “Salty” and *Qalmi* means “Crystals”. The drug appears crystalline in form and tastes salty, hence, popularly known as *Shora Qalmi* in Unani system of Medicine.

General information

Shora Qalmi is one of the important mineral drugs which are being used for medicinal purpose since long time in Unani Medicine and recorded as down from about 2200 B.C. (Wadud A, 2021) It is also called *Abqar* or *Ibqar* in Persian, Potassium nitrate in English and *Thalaj al-Sini* in Arabic. (Baytar I, 1985) It is white, hexagonal odorless crystals having sour taste and produces coldness when put in mouth. (Khan MA, 2014, Kabiruddin HM, 2007) Its chemical formula is KNO_3 . It is a compound of potassium ions (K^+) and nitrate ions (NO_3). (Khan MA, 2014) The unpurified granular form is called non-crystalline potassium nitrate (*Shora*). There is a big manufacturing industry of *Shora Qalmi* in Uttar Pradesh, India. (Safiuddin HS, 2013, Rafiquddin HM, 1985, Kalam, 2021) It is a natural source of nitrogen and can be prepared by combining ammonium nitrate and potassium hydroxide ($\text{NH}_4\text{NO}_3 + \text{KOH} \rightarrow \text{NH}_3 + \text{KNO}_3 + \text{H}_2\text{O}$). (Khan MA, 2014) *Shora* Medicinally it is used after doing purification by specific method. (Kabiruddin HM, 2006) Salt petre is used after cleaning it several times (in water) and purifying it with $\text{KAl}(\text{SO}_4)_2$. (Tariq M *et al.* 2013) H_2O . (Zysk KG, 2008) The purification process was first given in 1270 A.D. by the Arab chemist in the “Book of Military Horsemanship and Ingenious War Devices” where he first described its use. (Wadud A, 2021) *Qalmi* is also prepared by combining ammonium nitrate and potassium chloride. In USM it is used for the management of urogenital and respiratory disorders including retention of urine, ulcers of urinary tract, hepatomegaly, splenomegaly, pruritus, fever, gout, gonorrhea, asthma etc. (Baytar I, 1985, Safiuddin HS, 2013, Tariq M *et al.* 2013)

The method of purification of *Shora Qalmi*:

Shora Qalmi 12 tola (120g) and *Gandhak Amlasar* (purified Sulphur) 14 g should be kept in a new clay pot then put on fire so that both the ingredients start to melt. The pot should be kept on the fire until the smoke comes out from the pot, when the smoke stops coming out, both the ingredients will appear like water. Now the pot should be taken out from the fire and they should be poured out in a pot of copper fortified with the zinc. When it solidifies by air then it must be preserved and used when it is required. (Kabiruddin HM, 2006)

Morphological and Organoleptic characteristics: (Ali A, 2004, AbdulHakeem M, 2011)

<i>Rang</i> (colour):	White shiny
<i>Bu</i> (odour):	Odorless
<i>Qiwam</i> (consistency):	Hard
<i>Maza</i> (taste):	Sour in taste, giving cooling effect when put on tongue
<i>Shakal</i> (shape):	Hexagonal crystal
<i>Tahlil</i> (dissolution):	It is moderately soluble in water but insoluble in alcohol.
Reaction with fire:	It sparks when put on fire



Fig. 01 *Shora Qalmi* (potassium nitrate in crystal form)

***Ajza-i-must'mala* (parts used):**

Medicinally it is used in powder form either alone or in compound formulations (Ali A, 2004)

***Mizaj* (temperament):**

It has hot and dry temperament in 3rd degree. (Khan MA, 2014, Ghani HN, 2010)

***Af'al* (actions):**

It has *Qāti'* (desiccant), *Munaqqī-i-Balgham* (evacuant of phlegm), *Mushil* (purgative), *Mu'arriq* (diaphoretic), *Muhallil-i-Waram* (anti-inflammatory), *Māni'-i-Injimad al-Dam* (anti-coagulant), *Kāwī* (caustic), *Mudirr-i-Bawl* (diuretic), *Mudirr-i-Hayd* (emmenagogue), *Mufattih-i-Sudad* (deobstruent), *Jālī* (cleanser), *Munaffith-i-Balgham* (expectorant), *Mufattih-i-'Uruq* (vasodilator), *Dāfi'-i-Hurqa al-Bawl*, *Dāfi'-i-Suzāk* (anti-gonorrhoeal), *Dāfi'-i-Humma* (anti-pyretic) etc. properties. (Baytar I, 1985, Khan MA, 2014, Kabiruddin M, 2014, Ghani HN, 2010, AbdulHakim 2011, Rafiquddin HM, 1985)

***Iste'malat* (uses):**

It is used for the treatment of *Ihtibās al-Bawl* (retention of urine), *Ihtibās-i-hayd* (amenorrhoea), *Quruh Majāri al-Bawl* (ulcers of Urinary Tract), *'Azm-i-Jigar* (hepatomegaly), *'Azm-i-Ṭihāl* (splenomegaly), *Hikka* (pruritus), *Suzāk* (gonorrhoea), *Humma* (fever), *Niqris* (gout), *Diq al-Nafas* (asthma), *Iltihāb al-Sho'b* (bronchitis), *Su'āl* (cough), *Suda'-i-Sukkari* (headache due to hangover) etc. (Baytar I, 1985, Khan MA, 2014, Kabiruddin M, 2014, Ghani HN, 2010, AbdulHakim 2011, Rafiquddin HM, 1985)

***Tarkib-i-Iste'mal* (mode of administration):**

***Suda'* (headache)**

- It is beneficial for treating headaches due to its *Muhallil-i-Waram* (anti-inflammatory) (Kabiruddin M, 2014)

***Shaqiqa* (migraine):**

- Due to its *Munaffith-i-Balgham* and *mushil* properties it is used in *Shaqiqa* (migraine) which is caused by *Sawdawi* morbid material.
- Due to its *Mufattih-i-'Uruq* property, it acts on the vascular system and thus reduces the increase frequency of the pulse. (Kabiruddin M, 2014)

Waram-i-Halaq (pharyngitis)

- A small amount of nitre, which is allowed to dissolve gradually in the mouth, is a well-liked and effective treatment for sore throat in its early stage of inflammation. (Nadkarni DKM, 1982)

Diq al-Nafas (Asthma)

- Due to its *Muhallil-i-Waram* (anti-inflammatory) property, it is beneficial for treating asthma attacks. (Kabiruddin M, 2014)

Amrad-i-Bawl (urinary disorders)

- Due to its diuretic property, it is used for the treatment of *Ihtibās-i-bawl* and *Ihtibās-i-Hayḍ* either orally or locally and due to its detergent property, it is also used in urethral ulcer. (Rafiquddin HM, 1985, Kabiruddin M, 2014, Kalam MA 2021)
- It possesses *Mudirr-i-Bawl*, *Mu'arriq* and *Mufattih* properties so it can be used in different types of fever mentioned in Unani medicine, as well as retention of urine, UTI and ulceration. (Kabiruddin 2007, Ali A, 2004)
- To relieve scalding and retention of urine, as well as suppression or insufficiency of urine, 80 grains of a mixture of nitrate in 2 parts and radish leaf juice in 1 part are administered. (Nadkarni DKM, 1982)
- An effective treatment for gonorrhoea involves mixing 10 grains of nitrate with a wine glass' worth of *Abelmoschus esculentus* decoction twice or three times per day. (Kabiruddin M, 2014, Khan MA, 2014, Nadkarni DKM, 1982)

Jarb-wa-Hikka (scabies and pruritus)

- This drug is used locally in the treatment of *Jarb-wa-Hikka* (scabies and pruritus) due to its detergent property. (Ali A, 2004)

Azm-i-Tihal (splenomegaly)

- Due to its *Mufattih-i-Sudad* property, it is used in splenomegaly. (Kabiruddin 2007, Kalam MA 2021)

Amrad-i-Mafasil (joint diseases)

- Due to its *Muhallil-i-Waram* (anti-inflammatory) property, it is beneficial for treating gout attacks as well as headaches and asthma attacks. (Kabiruddin M, 2014)
- Inhaling the vapors of burning nitrate papers that have been previously soaked in saturated nitrate solution and then dried (often mixed with *Datura* and other medications) can provide relief from asthma, chronic bronchitis, and other spasmodic coughs. (Safiuddin HS, 2013)
- In cases of acute rheumatism, a strong nitre solution (3 ounces to a pint of water) creates a more relaxing application to the painful, swollen joints; cloths saturated with it should be kept on top of the affected areas continuously for a more helpful impact. (Nadkarni DKM, 1982)

Amrad-i-Jild (skin diseases)

- Solution of nitre is an effective topical treatment for freckle removal as well as bruises and abrasions. (Kabiruddin M, 2014, Nadkarni DKM, 1982)

Miqdar Khurak (dose):

1-1.5g (Kabiruddin M, 2014); 5-20 grains (1 grain=10 mg) (Ghani 2010); 1.75 g (Khan MA, 2014)

Mazarrat (side effects, adverse effects or toxicity):

It causes cardiac weakness and is also contraindicated in inflammatory conditions of esophagus, stomach, intestine, kidneys and urinary bladder. (Khan MA, 2014, Ashraf HM, 2011, Kabiruddin M, 2014, AbdulHakim 2011, Rafiquddin HM, 1985, Ghani, 2010)

Musleh (correctives):

Unani Scholars have mentioned *Katira* (Gum tragacantha) and *Asal* (honey) to counter the adverse effects of *Shora Qalmi* (Khan MA, 2014, Ashraf HM, 2011, Kabiruddin M, 2014, AbdulHakim 2011, Rafiquddin HM, 1985, Ghani, 2010)

Badal (substitute):

In case of non-availability of *Shora Qalmi*, *Namak Indrani* (Namak Lahori) can be used as substitute. (Khan MA, 2014, Ashraf HM, 2011, Kabiruddin M, 2014, AbdulHakim 2011, Rafiquddin HM, 1985, Ghani, 2010)

Murakkabat (compound formulation):

S.No	Main compounds	Dose and method of administration	Action and uses
1	<i>Alkali</i> (Anonymous, 2011)	2 tablets twice a day after meals.	It is used in the treatment of hyper-acidity as well as heart burn due to antacids trait.
2	<i>Awja'iya</i> (Anonymous, 2011)	2 tablets twice a day with lukewarm water orally	It has analgesic, anti-inflammatory, and resolving qualities. It is helpful in the treatment of arthralgia, gout, and arthritis.
3	<i>Bukhur-i-Dama</i> (Said HM, 1997)	Pinch of <i>Sufuf</i> should be sprinkled on 2-3 burning coal embers and the patient made to smell the smoke.	Especially when the patient is having respiratory difficulties, it offers relief from asthma.
4	<i>Dawa bra-i-Suzāk</i> (Kabiruddin HM, 2006)	3 g with lassi orally	This substance is diuretic. It is useful for gonorrhoea.
5	<i>Dawa-i-Abqar</i> (Kabiruddin HM, 2006)	3 g with 108 ml of radish leaves juice and 60 ml <i>Turanjabin</i> orally	It possesses lithotriptic and diuretic effects. It is employed in the management of cystolithiasis and nephrolithiasis.
6	<i>Dawa-i-Karhai wali</i>	1 g followed by 2 ml	It is recommended for

	(Said HM, 1997)	<i>Sharbat-i-Bazuri</i> in 125 ml of water.	newly developing and recrudescence syphilis. Also efficient in treating ulcers.
7	<i>Dawa-i-Suzak</i> (Kabiruddin HM, 2008, Hafiz HA, 2005)	1.5 g with <i>Sharbat-i-Bazuri</i> orally	It has diuretic properties and used in the treatment of gonorrhoea.
8	<i>Dawa-i-Suzāk</i> (Anonymous, 2007)	1.5 gm orally	It has curative, diuretic, and antiseptic qualities. It is used to treat persistent gonorrhoea.
9	<i>Filia</i> (Anonymous, 2011)	For 40 days, take one pill twice a day with water or milk. If there is severe diarrhea, the dose might be lowered.	It possesses resolving, refrigerant and sedative properties. It is applied to the management of filariasis.
10	<i>Habb-i-Ashkhār</i> (Said HM, 1997)	2 pills twice daily in the morning and evening with 125 ml of water orally	It is a diuretic and an anti-inflammatory. It is employed in the management of spleen hardness, particularly in reducing spleen enlargement.
11	<i>Habb-i-Namak Shora wali</i> (Abdullah HM, 1998)	1 tablet with lemon juice orally	It is employed in the management of splenomegaly.
12	<i>Habb-i-Rewand</i> (Anonymous, 2007)	3-5 g orally	Ascites is treated with this drug because of its diuretic and Hepato-stimulant
13	<i>Habb-i-Suzāk</i> (Kabiruddin HM, 2008, Khan HA, 1995)	1 tab with <i>Sharbat-i-Bazuri</i> thrice a day orally	It has wound healing, antiseptic and diuretic properties. It is used in the treatment of chronic gonorrhoea.
14	<i>Habb-i-Suzak Hād</i> (Anonymous, 2007)	1.5 to 3 g orally	It has diuretic and liver-stimulating effects. It helps to treat burning micturition and gonorrhoea.
15	<i>Habb-i-Tihāl</i> (Abdullah HM, 1998)	1 tablet thrice a day orally	It is used in the treatment of splenomegaly
16	<i>Habb-i-Yaraqan</i> (Said HM, 1997)	1 pill at a time in the morning and evening with	Particularly efficient for treating jaundice.

		the water of <i>Raphanus sativus</i> (60 ml) and <i>Sharbat-i-Bazuri</i> (20 ml) orally	
17	<i>Jawhar-i-Kafur Qawi</i> (Anonymous, 2001)	For inhalation only	It is used for the treatment of epilepsy as well as syncope.
18	<i>Kohal-i-Zufra</i> (Anonymous, 2007)	Local application for ophthalmic use	It is a detergent and an anti-inflammatory. It is employed to treat pterygium.
19	<i>Kushta Abrak Kalān</i> (Kabiruddin HM, 2008, Said HM, 1997)	2 tablets with 10 gm honey or butter orally	It is used as an aphrodisiac and tonic for general debility. In addition, it is utilized for bronchitis and asthma.
20	<i>Kushta Abrak Safed</i> (Kabiruddin HM, 2008, Said HM, 1997)	60-125 mg orally	It is used to cure overall weakness and debility since it is a general tonic and aphrodisiac.
21	<i>Kushta Abrak Siyah</i> (Kabiruddin HM, 2008, Said HM, 1997)	120 mg orally	Due to its properties as an aphrodisiac and general tonic, it is used to cure general sluggishness and debility.
22	<i>Kushta Mirgang</i> (Kabiruddin HM, 2008, Said HM, 1997)	60 mg/ 2 tablets with 5 g <i>Jawarish Jalinus</i> orally.	It is beneficial as a stomach and liver restorative.
23	<i>Kushta Muthallas</i> (Kabiruddin HM, 2008, Said HM, 1997)	60 mg / 2 tablets with 10 g <i>Ma'jun Arad Khurma</i> or butter orally	It is useful in premature ejaculation, attenuated seminal fluid and excessive nocturnal emission
24	<i>Kushta Surb</i> (Said HM, 1997)	1 tablet with 10 g <i>Ma'jun Supari Pak</i> followed by 250 ml of milk orally	It is used in the treatment of spermatorrhoe, night emission and premature ejaculation.
25	<i>Paigham-i-Sehat</i> (Hafiz HA, 2005)	4 ratti (ratti=125mg) with <i>Arq-i-Badiyan</i> orally	It has digestive and carminative properties. It is used in the treatment of indigestion, cholera and colic pain.

26	<i>Qurs Iksir Tihal</i> (Anonymous, 1986)	1 tablet twice a day after meal	It is employed to treat hepatosplenomegaly
27	<i>Qurs-i-Suzak</i> (Anonymous, 2011)	4 tablets twice a day orally	It possesses diuretic, antibacterial, and wound-healing effects. It's used to treat chronic gonorrhoea, ureteric ulcers, burning urination, and urine retention.
28	<i>Rogan-i-Sankhiya</i> (Ghani HN, 2010)	Q.S for local application only	It possesses resolving, analgesic, and anti-inflammatory effects. It is applied to the management of arthritis
29	<i>Sharbat-i-Fawlād</i> (Anonymous, 2011)	Adult - 20 ml twice a day Children - 10 ml twice a day	It helps with anemia and also works as a general tonic for vital organs.
30	<i>Shiyaf-i-Zufra</i> (Anonymous, 2007)	Local application for ophthalmic use	It possesses detergent and anti-inflammatory qualities. It is applied to the management of pterygium.
31	<i>Sufuf-i-Basbasa</i> (Said HM, 1997)	2 g twice a day after meal orally	It enhances the function of liver, stomach, and intestine, which aids in digestion and reduces the creation of phlegm.
32	<i>Sufuf-i-Dard Band</i> (Said HM, 1997)	Around 250 mg inside <i>Batasha</i> or <i>Jaggery</i> with tea.	It is utilized for all pain types, particularly chest discomfort in pneumonia. It is contraindicated in pregnancy.
33	<i>Sufuf-i-Iksir Suzak</i> (Abdullah HM, 1998)	2.5 g with butter milk orally.	It is helpful in the early stages of gonorrhoea. It eliminates extra urine, which helps the bladder to empty.
34	<i>Sufuf-i-Indrijulab</i> (Kabiruddin HM, 2008, Said HM, 1997)	5 g mixed in 500 ml cow's butter milk thrice a day, orally for three days	Both diuretic and anti-strangury properties are present. It is employed in the treatment of syphilis and gonorrhoea.
35	<i>Sufuf-i-Mudirr-i-Bawl</i>	6 g with butter milk thrice	It is recommended for

	(Abdullah HM, 1998)	a day, orally	dribbling and retention of urine
36	<i>Sufuf-i-Pathar Phori</i> (Anonymous, 1986)	6 g followed by 40 g <i>Sharbat-i-Bazuri</i> in water orally	It is used in the treatment of renal calculi.
37	<i>Sufuf-i-Shora</i> (Kabiruddin HM, 2006)	3 g with 120 ml of reddish leaves juice, orally.	It has diuretic and lithotriptic effects. It is used to treat gonorrhoea and renal calculus.
38	<i>Sufuf-i-Shora Qalmi</i> , (Kabiruddin HM, 2006, Said HM, 1997)	3 g with 120 ml of reddish leaves juice and 5 gm in the morning with yogurt orally	It is diuretic, detergent and anti-gonorrhoeal in nature. It is employed to treat gonorrhea.
39	<i>Sufuf-i-Suzāk</i> (Kabiruddin HM, 2006)	7 g with lassi orally	It has diuretic assets. In order to treat gonorrhoea, it is utilized.
40	<i>Surma-i-Nūrani</i> (Anonymous, 2011)	Q.S. for local application only	It has both eye tonic and detergent qualities. It is used to cure asthenopia/amblyopia, pterygium, opacity, cataracts, and night blindness.
41	<i>Surma-i-Zahiri</i> (Anonymous, 2011)	Q.S. for local application at night.	It is used to cure conjunctivitis, incipient cataracts, and to eliminate ocular opacity and blurry vision.
42	<i>Tehāli</i> (Anonymous, 2011)	Adult - 10 ml twice a day Children - 5 ml twice a day	It has analgesic, resolving, and anti-inflammatory properties. It is used to treat both hepatitis and splenitis.

Pharmacological studies

According to some studies *Shora Qalmi* is reported to have various significant activities in combating several diseases.

Dental hypersensitivity:

One of the studies have reported that *Shora Qalmi* possess the clinical efficacy in the treatment of dental hypersensitivity. (Sharma S *et al.* 2012)

Jalalian *et al.* (2009) revealed in one of the comparative studies that the application of potassium nitrate to dentin in full crown preparations prior to cementation reduced post-operative sensitivity significantly in comparison to Gluma desensitizer. (Jalalian E *et al.* 2009)

Anti-inflammatory activity:

In a study reported by Mohd Zubair M *et al.* (2014) that, 30 clinically diagnosed patients above the age of 10 years were enrolled for one month from the OPD/IPD of Majidia Hospital, New Delhi. The combination of four single drugs namely *Sat Behroza* (*Pinus longifolia*), *Ral Safed* (*Shorea robusta*), *Shora Qalmi* and *Kafur* (*Cinnamomum camphora*) were used in a ratio of 2:2:2:1, respectively, in the form of fine powder. The 7g mixture of these drugs was given in two divided doses per day for one month. There significant improvement in objective parameters was found except transparency of urine. On the basis of results obtained from compound formulation on various objective parameters, it is concluded that tested Unani formulation has significant effect in cases of *Waram-i-Majra-i-Bawl* (urethritis). (Zubair M *et al.*, 2014)

Diuretic property:

In a clinical study, aqueous suspension of *Sufuf-i-Suzak Qawi* was found to have diuretic activity comparable with the standard drug furosemide in producing urinary out-put and urinary sodium excretion and has no effect on urinary potassium excretion. (Krishna and Agrawal, 2006)

Antiurolithiatic and an antioxidant activity:

Ahmad *et al.* (2021) revealed that *Sufuf-i-Pathar Phori*, a polyherbal Unani formulation prepared by using six different plant and mineral ingredients and one of the ingredients is *Shora Qalmi* possessed anti-urolithiatic and an antioxidant activity and its long term daily oral consumption for up to 3 months was found to be safe in albino Wistar rats. (Ahmad W, 2021)

One case study was done by Khan MS (2019), in which a 25 years old male patient of ureteric calculi was treated with Unani pharmacopoeial medicine; *Qurs Kaknaj*, *Kushta Hajrul Yahud*, *Jawarish Zar'uni*, *Sharbat-i-Bazuri Mo'tadil* and *Sharbat Alu Balu* as oral administration, with the aim to evaluate the efficacy of drugs and to avoid surgery. Patient has shown excellent result in subsequent investigations and finally patient got free from ureteric calculus of 8mm in size just within 6 days of Unani treatment without operation. (Khan MS 2019)

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. The patient was treated with *Qurs-i-Kaknaj*, *Qurs-i-Kushta Hajrul Yahud*, *Jawarish Zar'uni* and *Sharbat-i-Bazuri Mo'tadil*. 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 treatment. The formulations were found to be safe, effective and to prevent urinary supersaturation of lithogenic substances. (Khan and Ahmad 2021)

Physicochemical standardization of compound formulation containing potassium nitrate:

The purification, preparation and standardization of *Kushta Abrak Safed* having *Shora Qalmi* were performed by Tariq et al. (2013). *Kushta* was evaluated on classical parameters like finger test, fineness test etc. as well as on modern parameters like bulk density, tapped density, hausner's ratio, carr's index, pH, loss of weight on drying, total ash, acid insoluble ash, water soluble ash, extractive value and loss of weight on ignition. The physicochemical parameters evaluated in this study might be considered as standard parameters of *Kushta Abrak Safed*. (Tariq M et al. 2013)

CONCLUSION

On the basis of above finding it may be concluded that, *Shora Qalmi* (Potassium nitrate) is very effective for the treatment of several ailments like, liver and splenic diseases, urinary problems, sexual disorders, skin diseases even gynecological and nerve diseases also, either taken alone or in compound form. Pharmacological studies of its compounds are found very effective in treating urinary calculi but the number of studies is very less for other than kidney diseases, so more scientific studies are required. Hope this review will help the scientific community for further researches.

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