

VERSATILE USES OF NOVEL HERB *KHARE KHASK* (*T. TERRESTRIS L.*) IN ETHANOMEDICINE

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ABSTRACT

The usage of medicinal plants for disease management has become a therapeutic modality. In Unani literature numerous drugs are mentioned which have immense medicinal properties. *Kharekhask* (*Tribulus terrestris Linn*) is one of them. It has long been in use as a Unani drug for different ailments such as *ehtabase haiz* (amenorrhea) and *amraze rehm* (uterine disease) etc as it has *mudire baul wa haiz* (diuretic and emmenagogue), *muhallile auram* (anti-inflammatory), *muqawwie bah* (aphrodisiac) etc properties. *Tribulus terrestris* contains steroids, saponins, flavonoids, alkaloids, unsaturated fatty acids, vitamins, tannins, resins, nitrate potassium, aspartic acid and glutamic acid. Moreover, it has been pharmacologically proven for its

aphrodisiac, CNS depressant, anti-inflammatory, analgesic, antispasmodic, diuretic and estrogenic effects. In the present review, we focus on taxonomy, chemical constituents and uses of *Kharekhask* (*Tribulus terrestris*) in Unani system of medicine.

KEYWORDS: *Kharekhask*, *Tribulus terrestris*, Unani drug.

INTRODUCTION

Kharekhask is perennial creeping herb commonly known as puncture vine^[1] is a tropical plant distributed throughout India.^[2] In indigenous medicine, the entire plant and particularly, the fruits are extensively used^[2] since ancient times as aphrodisiac.^[1] *Tribulus terrestris L.* variety is also known as *mitha* (sweet) *gokhru* as distinguished from *kadva* or *moto gokhru* (*Pedalium murex*).^[3] The roots and fruits are useful in various countries for the treatment of different diseases.^[2] It has also shown antibacterial, antifungal activity and anti-inflammatory activity.^[2] The Latin name *Tribulus* originally meant the caltrop (a spiky weapon), but in

Classical times already the word meant *Tribulus* plant as well. The Greek word, τριβόλος^[4,5] meaning 'water-chestnut', translated into Latin as *tribulos*^[4] and found near Dardanelles.^[5] *Kharekhask* is the *khask* or *Hasak* of Arabs and Persians; In Sanskrit *gokshuru* signifies cow's hoof (cloven hoof)^[3,5] from the resemblance of the cocci when adhering together in pairs, whereas *Ishugandha* alludes to the aroma of the plant *Khare khask* is well described by Ainslie and Dioscorides calls it τριβόλος.^[5]

Taxonomy

Botanical Name: *Tribulus terrestris* Linn.^[5,6,7]

Family: Zygophyllaceae.^[5,8]

Class: Dicotyledons.^[8]

Subclass: Polypetatae.^[8]

Series: Thalamiflorae.^[8]

Order: Geraniales.^[8]

Genus: *Tribulus*.^[8]

Species: *terrestris*.^[8]

Vernacular Name:

Arabic: *Khask*,^[6,9] *Akhwasul juz*,^[6,9] *Kharakhusk*,^[3] *Zufratul ajooz*,^[6,7] *Hamasul ameer*,^[9] *Kohuj*.^[7]

Bengali and Oriya: *Gakshura*, *Gokhuri*.^[3,5]

English: *Caltrops fruits*,^[9] *Calthrops*,^[9] *Small Caltrop*,^[3,5,9] *Land caltrops*,^[9,10] *Puncture vine*.^[10]

Gujarati: *Mitha gokhru*,^[9] *Betagokhru*.^[5,9,11]

Hindi: *Gokhru*,^[3,5,6,10,12]

Kannada: *Sannaneggilu*^[3,11,12]

Malayalam: *Nerinji*.^[3,5,11,12]

Marathi: *Sarala, Sharatte*^[11]

Sanskrit: *Gokshuru, Ishugandhaa*^[3,11,12]

Urdu: *Gokharu*.^[9]

Temperament (*Mizaj*): Hot and Dry 1st degree^[6,13,14,15] Cold and Moist;^[7] *Murakkabul Quwa*.^[7,13,16]

Actions mentioned in Unani Literature (*Af'al*): *Mudire haiz* (emmenagogue);^[13,14,15,16] *Mudire Baul* (diuretic);^[13,14,15,16] *Muqawwi bah* (aphrodisiac)^[13,14,15,16] *Mufattitehisat* (lithotripter);^[13,14,15,16]

Muhallil (anti-inflammatory);^[16] *Kasireriyah* (carminative);^[16] *Jali* (detergent);^[13,16] *Munzij* (concoctive);^[13,16] *Rade* (repellent);^[13,16] *Mullayin* (laxative).^[13,16]

Therapeutic uses mentioned in Unani Medicine (*Iste'mal*)

- *KhareKhask* is an emmenagogue, useful in uterine diseases. Orally, decoction of fruits is useful in regularizing menstruation.^[6,16] Decoction is also useful in puerperium to remove retained products.^[6] Orally, powder of *Kharekhask* 14 g and *kunjad siyah* 7 g with honey and milk is useful in *sailanur rehm*.^[6] It is useful in infertility.^[16]
- Decoction of 20 g of *gokhru* is useful in *ikhtanaqur rehm* (hysteria), *sira* (epilepsy), *wehm* (delusion), *zoafe dimagh*, *shaqiqa* (migraine), headache, and *sadr* (giddiness).^[6] It also cures the *nazla* (common cold).^[6]
- *Kharekhask's* fresh leaves when crushed and placed over eyes it cures the *ramad* (conjunctivitis) and *ussara of kharekhask* cures the eye diseases.^[6]
- Oil of *kharekhask* is useful in *naksheer* (epistaxis), and dryness of nose.^[6]
- Gargling with decoction of *kharekhask* cures *warme halaq* (pharyngitis, laryngitis) and *khunnaq* (diphtheria).^[6]
- Decoction of 20 g of *kharekhask* (boiled in half liter of water and when water remains 100 g) administered 4 hourly help in curing diphtheria.^[6] When it is used with honey it cures *qalah* (stomatitis), infections of oral cavity and throat and inflammations and pain of gums.^[7]

- Its decoction is useful in cough, shortness of breath, and hoarseness of voice. Decoction with ghee is useful to expel *balgham*.^[6]
- Decoction of *gokhru* add *misri* thrice daily is useful in *khafkhan* (palpitation), *izm me qalab* (cardiomegaly), pericardial effusion, and anxiety.^[6]
- *Kharekhask* improves the digestion, appetite and cures the stomach ache. Decoction of *kharekhask* with *roghan zard* and sugar each 10 g, twice daily with warm water is useful in *bawaseer badi*.^[6]
- It is useful *galbae safra*, *hararate jigar*, *zoafe jigar*, *zoafe tihal*. It is also helpful in jaundice and ascites.^[6]
- Powder of *kharekhask*, 20 gms and *filfil siyah*, 6 g twice daily is useful in liver diseases.^[6]
- Fruit of *kharekhask* cures burning micturition.^[6,7,16] and *sozak* (gonorrhoea).^[6] It breaks the renal and bladder stones and act as a diuretic. Orally, its fruit powder with honey and goat milk acts as *mufattate hisat* (lithotriptic). Powder of *kharekhask* mixed with *misri* 6 g taken orally twice daily, helps in diuresis.^[6] Powder of *kharekhask* mixed with honey when applied over wound it prevents infection.^[6] It is useful in dribbling of urine,^[7,16] *darde masana*^[7] (dysuria) and *mufattate hisat*.^[16] If fresh leaves after crushing is used it breaks the stones of kidney and bladder.^[7]
- Orally, decoction of leaves and fruits *kharekhask* 25g to 75g twice or thrice daily is useful *warme masane musmin* (chronic cystitis). Its leaves and fruits decoction with *roghane sandal* 10 drops thrice daily, orally is useful in *sozak* (gonorrhoea).^[6]
- It is useful as *munzij*, *mullayin*, and in *hararate-jigar*.^[16] It is also used in premature ejaculation.^[16] It improves the spermatogenesis and can be used in *qolinj* (Colic).^[6,7]
- It is used in back ache.^[16] *Joshanda* of *kharekhask* is useful as *muhallil warm*.^[6,16]
- It also works as corrective of stomach function.^[6,16] Its *usaara* can be used as *surma*.^[7]
- Leaves of *kharekhask* is *tagziya bakhsh*(nutritious).^[7]
- *Roghan kharekhask* is useful in preventing graying of hair, makes hair strong and shiny.^[6]

Miqdar (Dosage): 5-7g;^[14,15,16] 4-6g¹³ 7-7.5g.^[6] 20-30g.^[6]

Muzir (Adverse effects): It is *muzir* for brain and diseases of brain.^[13] Excessive use will cause *tashanujj asab wa azla't* and harmful to kidneys.^[6]

Musleh (Corrective): *Roghane badam*, *gulkhand*, and *roghane ghoe*, honey.^[6] *Badam* (almonds), *roghane kunjud* and milk.^[13]

Badal (Substitutes): *Usaara* of leaves and root.^[13,14]

Important formulations in Unani system: *Sharbate bazoori*,^[14] *Sharbate mudire tam*,^[14] *Safoof sailan rehm*,^[14] *Jawarish zaruni ambary banuskha kalan*,^[17] *Halwa-i-gazar bmaghaze sar-i-kunjashk wala*,^[17] *Safoofe kalan*,^[17] *Sharbate kaknaji*,^[17] *Sharbate mudir*,^[17] *Arqe ananas*,^[17] *Arqe dasmol*,^[17] *Lubub alasarar*,^[17] *Majun pampadana*,^[17] *Majun zanjabeel*,^[17] *Majun sange sar mahi*,^[17] *Majun shir bargadh wali*,^[17] *Majun mobahee antaki*.^[17]

Ethno-botanical description: *Tribulus terrestris* is a variable, prostrate annual up to 90 cm in length, commonly found throughout India^[12,18] up to an altitude of c. 5,400 m and up to 11000 feet in Kashmir.^[12] It has a slender fibrous root, 4-5 inches long, cylindrical, and of a light brown color; the odor is faintly aromatic and the taste sweetish and astringent. From the root spring four to five delicate stalks, spreading flat on the ground; these are hairy and extend to 2 and half feet in length; the leaves are pinnated, leaflets 5-6 pairs, nearly round. The flowers are axillary on short peduncle, and composed of five broad obtuse yellow petals; these are succeeded by a roundish five-cornered fruit, about the size of a marble armed with prickles; this ripening divides into five cells each armed with 4 strong sharp thorns and containing several seeds. The cocci are wedge-shaped yellowish when ripe, the external convex being rough between the thorns. When all five are in situ, the fruits presents ten thorns pointing towards the peduncle, and ten pointing outwards round the circumference; the latter are developed first. The seeds are oily and enclosed in very hard stony cells. The taste is faintly aromatic and rather agreeable.^[5,11,18]

Habitat: *Tribulus terrestris* is found in sandy soil throughout India and other warm countries, Ceylon, Iraq and plentiful in the United provinces and Madras.^[2,3,5] It is an annual plant also distributed in warm regions of Asia, Africa, Europe, America and Australia.^[19]

Part used: Fruit, root and entire plant.^[3,6]

Taste: Astringent and it is agreeable.^[20]

Action in Ethano medicine: Cooling,^[3,5,12] Demulcent,^[3] Diuretic,^[3,5,12] Tonic,^[3,5,12] Aphrodisiac,^[3,5,10,12] Analgesic,^[10,18] Antibacterial,^[10,18] Anti-inflammatory,^[10,18] Antispasmodic,^[10,18] Anti-urolithiatic,^[10,18] Cardio-tonic,^[10,18] CNS depressant,^[18] Emollient,^[10] Appetizer,^[10] Digestive,^[10] Anthelmintic,^[10] Expectorant,^[10] Anodyne,^[10] Styptic.^[10]

Medicinal Uses in Ethano medicine

- It is given with hyoscyamus and opium in inflammatory conditions of urinary passage.^[3]
- Decoction of fruit of *kharekhask* with addition of impure carbonate of potash to be given in painful micturition.^[3,12] Used in calculus affection, urinary discharges and impotency in form of infusion.^[12] Used as diuretic in gout, kidney diseases and gravel.^[12]
- Its combination with bdellium is used in patient suffering from gonorrhoeal rheumatism with cystitis.^[3]
- Equal parts of *gokhru* and sesamum seeds taken with goat's milk and honey cures impotence arising from vicious practices.^[3]
- *Kharekhask* 10 parts, long pepper 5 parts cinnamon 4 cardamom 4 saffron 1 tejpatta 2 nutmeg 3 lettuce 3 mix and decoction is used as cooling, soothing and aphrodisiac.^[3]
- Decoction of leaves is useful as a gargle for mouth trouble, painful gums, and to reduce inflammation.^[21]
- Leave increases the menstrual flow, cure gonorrhoea.^[21]
- Fruits are also used to cure cough, and scabies.^[21]
- Plant and dried spiny fruits are used in decoction or infusion in cases of spermatorrhea, phosphaturia, diseases of genito-urinary system such as dysuria, gonorrhoea, gleet, chronic cystitis, calculus affections, urinary disorders, incontinence of urine, gout and impotence; also in uterine disorders after parturition and to ensure fecundity.^[3]
- In the Pharmacopoeia of India the use of *T. terrestris* as a diuretic in Southern India is noticed. In Padukota the flower rubbed with silver are applied in inflammation of the cornea. The action of this drug on the mucous membrane of the urinary passages appears to resemble closely that of Buchu and Uva Ursi; it may often be advantageously combined with opium and Hyosyamum.^[5]

Phyto-Chemistry: *T. terrestris* contains steroids, saponins, flavonoids, alkaloids, unsaturated fatty acids, vitamins, tannins, resins, nitrate potassium, aspartic acid and glutamic acid.^[22] Steroidal saponins and diosgenin is isolated from this plant. It is very rich in proteins and calcium. Dried fruits contain semi drying oil, peroxides, diastase, traces of glucosides, resins, protein and large amount of inorganic matters.^[21]

Yan *et al.* (1986) described the isolation and characterization of steroidal saponins including terrestrosin A, B, C, D and E, desgalactotigonin, gitonin, desglucolanatigonin and F-gitonin. In current times, other steroidal saponins including protodioscin and their respective sulfates,

terrestrinins A and B, and spirostanol type tribulosin, saponin and beta-sitosterol-d-glucoside have been secluded and characterized.^[20,23] Fruits contain traces (0.001%) of alkaloid, a fixed oil, a small quantity of essential oil, resins and nitrates.^[12]

An ethereal or an alcoholic extract of the powdered fruits yield to water a crystalline residue containing a body precipitated from its solution by ammonia and having the properties of an alkaloid, and associated with hydrochloric acid or alkaline chlorides. The fruits also contain a fat and a resin, the latter probably is the source of the aroma of the drug, as it gives off a fragrant odour when burnt. The fruits contain rather large quantity (14.9) of mineral matter.^[5]

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