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Unlocking the treasures of Tukhm Khashkhash Safaid (*Papaver somniferum* Linn.): A Review

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Abstract
Tukhm Khashkhash is a member of the Papaveraceae family and is made from the seeds of *Papaver somniferum*. In several traditional Unani texts, the description of poppies is mentioned. Avicenna, the renowned Unani scholar, also wrote about poppies in his well-known book "The Canon of Medicine." He stated that the little white seeds that are extracted from the capsule of the white poppy plant are known as Tukhm Khashkhash Safaid. For the purpose of extracting opium, the seeds that are collected prior to the capsules being cut are said to be prime quality. Since ancient times, they have been used as a nutritional food and to treat various illnesses, including skin conditions, diarrhea, dysentery, cough, premature ejaculation, chronic cough, and insomnia. Their hypoglycemic, antibacterial, and anti-carcinogenic properties have also been demonstrated scientifically. An attempt has been made in this review to compile the material that has been shared and to compile the data that is currently accessible about Tukhm Khashkhash.

Keywords: *Papaver somniferum*, Khashkhash, canon of medicine, poppy

Introduction
Natural remedies made from herbs are a special gift from nature that enhances all life on Earth. The use of herbs as medicine dates back to the beginning of life on Earth. The whole or parts of plants, such as the roots, stem, bark, leaves, flowers, fruit, and seeds, are used to make herbal medications [1].

Khashkash/Afyon (*Papaver somniferum*), a member of the Papaveraceae family, is one of the several herbal remedies mentioned in the Unani system of medicine. It is among the traditional plants that have been used for medicinal purposes for a very long time. Opium is commonly cited in classical Unani literature for its ability to relieve pain and induce sleep [2, 3].

In his renowned work "The Canon of Medicine", renowned Unani scholar Avicenna also discussed poppies. He stated that the tiny white seeds known as Tukhm Khashkhash Safaid are extracted from the capsule of the white poppy plant. In order to obtain opium, the unripe seed capsules are cut into milky latex. He claims that there are four different types of poppy seeds: garden, wild, black, and horned. According to him the best and safest types of poppy is the white poppy [4].

The entire plant parts of the opium poppy are usefull; as food, medicine, vegetables, and brewing. Because they contain up to 24% protein and other essential nutrients that are good for human health, opium poppy seeds are extremely nutrient-dense. Some regions of the world use the plant's leaves as a vegetable. The high amount of linoleic acid (68%) in poppies' seed oil makes it significant from a health perspective as well because it lowers blood cholesterol levels and is used to treat cardiovascular ailments in humans [5].

Poppy seeds, particularly black poppies, are anaesthetic and somniferous, according to Avicenna's well-known book. In addition to causing sleep, it prevents catarrh when taken as a suppository. When it comes to hemoptysis, chest congestion, and burning cough, poppies are helpful [6].

With particular relation to Unani medicine, we have reviewed and compiled the data that is currently accessible about Tukhm Khashkhash in this research

Plant Description
1. Scientific Classification [3, 7]

Rank	Name
Kingdom	Plantae
Subkingdom	*Viridiplantae*
Infrakingdom	*Streptophyta*
Superdivision	*Embryophyta*
Division	*Tracheophyta*
Subdivision	*Spermatophytina*
Class	*Magnoliopsida*
Superorder	*Ranunculanae*
Order	*Ranunculales*
Family	*Papaveraceae* [8-12]
Genus	*Papaveraceae*
Species	*Papaver somniferum*

Botanical Name: *Papaver somniferum Linn* [8-12].

Vernacular Names

Language	Names
Arabic	*Bazr-ul-Khashkhash*, [8, 9, 13] *Abunom*, [13] *Bazrulkhskhas* [10]
English	Poppy Seeds [11, 13, 14] Bale-wort, Joan Silver pin, Caranation Poppy [8, 9]
Persian	*Khas-khas*,[10] *Tukhm-e-Anarkewa* [8, 10, 15] *Koknar*, [13, 15], *Tukhme koknar* [10, 14]
Urdu	*Khashkhaash* [8, 9]
Gujarati	*Alphina*, *Posta*, *Khushus*, [8, 9] *Kharkhus* [14]
Hindi	*Khashkhash*, *Posta*, [8, 9, 13, 15] *Kahs-khasa*, [11] *Khaskhas* [10, 14]
Bengali	*Posto-dheri*, [11] *Pasto Dana*, [8, 9,14] *Poshto* [10]
Kannada	*Khasakhasi* [8, 9]
Oriya	*Post Dana* [8, 9]
Malayalam	*Kashakasha* [8, 9, 11]
Telegu	*Posta-katol*, *Gasugasalu*,[11] *Gasagasala*, *Kasakasa*, [8-10], *Gasalu* [8], *Kosakosa* [12]
Marathi	*Aphu*, *Posta*, *Khuskhus* [8, 9]
Kashmiri	*Kashkash* [8, 9]
Assammee	*Pasto Dana* [8, 9]
Punjabi	*Khashkhash*, *Khishk* [8, 9]
Sanskrit	*Khasa*, Khakasha [8, 9, 11], *Khas Khas*, *Kasa bijam* [11] *Chosa*, *Postu bijam* [10]
Tamil	*Gashagash*, *Posthakkai*, [10] *Gasagasala*, [8, 9] *Kasakasa*, [8, 9, 11] *Postoka* [12], *Kashkash* [14], *Gasagasalu* [10]

Morphology

These are the small white seeds of the *Papaver somniferum* Linn capsule. The seeds range in colour from white to slate grey and are subreniform and dried. Their surface is covered in polygonal reticulations that measure around nine lengths by five widths, and they are 1.25 mm long. The embryo, or oily endosperm, covers the bent seeds in a thick coating. They don't smell or taste [8, 9, 17].

Poppy oil is a pale yellow, odourless fixed oil with a nice, almond-like flavour. Oil, which can be extracted by either cold or hot expression, makes up 40-60% of the weight of poppy seeds. Compared to scarified capsules, seeds from capsules that have not been scarified for opium yield more oil [18].

Habitat and distribution

It is an Asian native herb. Uttar Pradesh, Punjab, Rajasthan, and Madhya Pradesh are the Indian states where it is grown. Russia, Yugoslavia, Bulgaria, Afghanistan, Pakistan, Japan, and Turkey also grow it. Production of fruit and flowers takes place from November to March. Opium found in Bihar and Bengal is known as "Patna" or "Bengal Garden Opium." It is also known as "Malwa" opium in Central and Western India, and "Benares" opium in Benares, Agra, and Oudh [9, 11, 17, 19].

Part used

- Seeds [11, 17]
- Capsule and inspissated juice [20]

MIZAJ

Cold 2^0 Moist 1^0 [15, 21] Cold 2^0 Dry 1^0 [8]

Therapeutic dose

- 1-3 gm, [8]
- 7 gm; [15]
- 7 gm-35 gm [21]

Side effects

For lungs, [15, 21] for brain [14]

Correctives

Mastagi, *Saleekha*, *Karafs*, *Shahad*, [21] *Badyan*, [14] *Shakar* [15].

Formulations

Laooqe khashkhash, *Dayaqoozah*, *Safoof-e-ziabetus*, *Roghan-e-laboob saba barid*. Sharbate *khashkhash*, *Habb-e-surfa*, *Bunadiq-ul-buzoor*, *Laboob-e-Kabeer* [8, 14].

Medicinal actions

Munawwim (Sedative), [8, 11, 14, 20, *Muqawwie Bah* (Aphrodisiac), [8, 17] *Qabiz* (Astringent), *Nasha-awar* (Narcotic), [11, 17] *Muzayyade Mani*, *Habis*, *Muzayyad-e-Laban*, *Murattab*, *Mughazi* (Nutritive), *Mukhaddir* (Anaesthetic), [8, 11, 14] *Qabiz-e-Shukm* (Constipating), [14, 21] *Mukhrij-e-Balgham* (Expectorant) [17] *Musammin-e-Badan* [11, 14] *Musakkin-e-Alam* (Analgesic), [8, 11, 14] *Dafe Nisyan*, [8] Myotic, [11] *Muqawwie Dimagh* (brain tonic), [14] *Muhallil* (Anti-inflammatory), [16] *Dafe ta'ffun* (Antimicrobial), [15] *Muqawwi-e-Aasab* (Nervine tonic) [17].

Medicinal Uses

Internal Uses

Nisyan (Amnesia), [8] Ishal (diarrhea), [8, 11, 17] *Zaheer* (Dysentry), [8, 17] *Sual* (Cough), [8, 14, 17] *Nazla* (Cold), [8, 14] *Irqun Nisa* (Sciatica), [11] *Zof-e-Gurda*, [8, 21] *Hawaas ko sust karta hai* (delay reflexes), *Nafs-ud-dum* (Hemorrhage), [14, 17] *Jiryan-e-ama'a* (intestinal hemorrhage), as a decoction in insomnia, melancholia and *Junoon* (for sedation), for Pain and Acute inflammation of Pharynx, *khushunate-e-sadar* and *khushunat-e-halaq* (sore throat) [14].

External Uses

As anodyne fomentations and also as emollients [10, 11, 14].

Poultice of Capsules are applied to bruised, inflamed, excoriated and swollen parts, tender and irritable ulcers and applied to the eyes in ophthalmia [10, 11].

As decoction used on sprains, contusions, bruises. As a paste applied on forehead for headaches [14].

Other uses

- **As a Diet**: A variety of nutrient-dense meals were suggested to the coaches of ancient Greek and Roman athletes. The athletes were given white bread made from ground meal that had been dusted with poppy

seeds. Poppy seeds are regarded as nutritious and are used in confections, breads, curries, and desserts. Additionally, seeds are utilized in the manufacturing of lecithin and medicines.

- **In the form of Oil:** The plant is frequently cultivated for its edible and industrial oil. Because it is less likely than olive oil to turn rancid, it can be used as a salad oil. In addition, the oil is used as cooking oil and to manufacture margarine and salad dressing. Poppy seed oil is used by artists as a drying oil in paints and varnishes. Additionally, several soaps, ointments, and emulsions contain it [18].
- **Poppy Seed Test:** This test involves the oral intake of 50 gm poppy seeds mixed in beverage or yogurt and visual inspection of urine samples during the next 48 hours. Detection of poppy seeds in the urine is interpreted as a positive confirmatory test for entero-vesical fistulas [24].

Chemical Constituents

Glycosides, Steroids, phenolics, sodium, potassium, calcium, iron, Thiamine, Riboflavin, Folic acid, Pentothenic acid and Niacin. Seed oil contains tocopherol, Choline, phosphorus, Magnesium. Seeds contain very small quantity of morphine, codein, narcotine, papavereine and thebaine [8, 19, 24].

Pharmacological Properties

The plant has been investigated for several biological activities.

- **Antibactetrial activity:** Aqueous infusion and aqueous decoction of Cumin (*Cuminum cyminum* L), Kalonji (Nigella sativa L), Poppy seeds (*Papaver somniferum* L) showed antibacterial activity *in vitro* [25, 30].
- **Hypoglycemic Activity;** The aqueous extract of seeds showed hypoglycemic activity in vivo [24, 30].
- **Anticarcinogenic Activity:** In the stomach, liver, and oesophagus of mice, it was discovered that poppy seeds significantly increased the activity of the carcinogen-detoxifying enzyme glutathione S-transferase [24, 30].
- **Antitussive Activity:** Narcotics, such as codeine, are among the most widely used antitussive drugs. The primary mechanisms by which codeine produces its antitussive actions are the opioid receptor in the central nervous system. The cough reflex arc is disrupted by these receptors' inhibition of the cough coordinating region in the brain stem [26].
- **Hypnotic Activity:** The oldest known hypnotic drug in humans is opium.
  Because of its unparalleled hypnotic and sedative qualities, it is frequently used to reduce anxiety, encourage tranquilly (sedative effect), and encourage sleep (hypnotic effect).
  Opium has been used for its calming properties since ancient times [27].
- **Antiviral Activity**: It has been demonstrated that certain alkaloids possess antiviral qualities that prevent the reproduction of human rhinovirus 14 and poliovirus 1. Papaverine effectively inhibits a number of influenza virus strains, such as respiratory syncytial virus (RSV) infections, human parainfluenza virus 3 (HPIV3), and paramyxoviruses parainfluenza virus 5 (PIV5) [28].
- **Anti-acne Activity:** The aqueous, hydroalcoholic, and ethanolic extracts of Tukhm Khashkhash and Darchini were discovered to have strong anti-acne properties against bacteria that cause acne [29, 30].

Conclusion

According to research on the origins of Tukhm Kahashkhash (Poppies), the Greeks were aware of them as a nutritive food and medication as early as the third century B.C. Since then, it has been utilized in the Unani medical system to cure a number of ailments, such as skin problems, sleeplessness, sciatica, diarrhea, dysentery, cough, premature ejaculation, and chronic cough. It's antibacterial, anti-carcinogenic, and hypoglycemic properties were also demonstrated by recent contemporary pharmacological research. Poppy seed oil is a nutritious source of essential fatty acids, particularly linoleic acid, used in various diets. However, it contains narcotic alkaloids, so consumption should be prescribed. Further scientific phytochemical, pharmacological, and clinical studies are needed.

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Conflict of Interest

Not available

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Not available

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