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A Comprehensive Review on Medicinal and Pharmacological Properties of *Shahtara* (*Fumaria parviflora* Lam)

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ABSTRACT

Shahtara (Fumaria parviflora Lam) is an annual herb widely used in traditional Unani System of Medicine. It is known as *Shahatraj* in Arabic, which is derived from *Shahatra* and called Shajaratuddam. In the ancient Unani system, it is called Shajaratuddam. The term derived from Sajarat means tree, and Dam means blood since it has a potent blood purifier property. Phytochemical analyses of this plant have revealed a rich array of bioactive substances, including phenolic compounds, terpenoids, flavonoids, and alkaloids, contributing to its pharmacological effects. Research indicates diverse bioactivities, such as anti-inflammatory, antioxidant, antimicrobial, antidiabetic, hepatoprotective, and neuroprotective properties, attributed to Fumaria parviflora. These effects stem from synergistic interactions among its phytoconstituents. For centuries, this herb has been utilized in traditional medicine to address various ailments, including inflammatory diseases, skin disorders, gastrointestinal issues, and respiratory ailments. The synergistic interactions among its phytoconstituents are responsible for these activities. It is often used in Unani System of Medicine for treating skin conditions such as eczema, psoriasis, and acne. It is believed to have a cooling effect on the digestive system and help reduce inflammation in the gut. This comprehensive review aims to provide insight into its phytochemical composition, pharmacological activities, traditional uses, and potential therapeutic applications."

Keywords: *Shahtara*, Fumaria parviflora Lam, Unani medicine. Dermatology, Pharmacological activities.

INTRODUCTION

The Unani system of medicine is widely practiced in India. In this system the medicines are obtained from three natural resources known as Mawaleed-e-Salasa namely, Nabatat (Plants), Madaniyaat (Minerals) and Haiwanat (Animals).[1,2] In Iraq and Turkey, Fumaria parviflora Lam is utilized extensively in conventional and ancient medical traditions including Unani and Ayurveda[3].In Ancient Medicine it is called as Shajarat al Dum.Because it purifies the blood with its properties.[4] The literal meaning of Shahtraj is called “Sultan Al Baqul”.[5]

Plant Description

Botanical name: Fumaria parviflora lam [6,7]

Table 1. Classification of Fumaria Parviflora Lam.

Kingdom	Plantae [8]
Subkingdom	Viridiplantae [8]
Infrakingdom	Streptophyta [8]
Super division	Embryophyte [8]
Division	Tracheophyte [8]
Subdivision	Spermatophytina [8]
Class	Magnoliopsida [8]
Superorder	Ranunculanae [8]
Order	Ranunculales [8]
Family	Fumariaceae [6,7,9,10]
Genus	Fumaria [8]
Species	fumaria parviflora Lam [8]

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Table 2.Vernaculars of Fumaria Parviflora Lam.

Language	Local Name
Arabic	Shahitraj [8,11]
Persian	Shahitra,tukhm-e- shahetraj [8]
Bengali	Vanshulpha,bansulpha,akasht papdu [6,8,9,12]
English	Fumitory [6,7,8,10,13]
Tamil	Tura [6,7,8,9,12]
Telugu	Chatarashi [6]
Indian	Fumitory,small-flower fumitory [8]
Hindi	Pittapapada,Dhamgajra,Pittapapara [6,8,9,11,12,13,14]
Marathi:	Pittapapara [8]
Punjabi	Shahtara,pittapapara [8]
Sanskrit	Varatikta,Sukshmapatra,Parpata [8,11,13,]
Unani Tibbi	Shahtaraj,Baqlatul-muluk,Sultanul-Baqul, Shahtara [6,9,10]
Urdu	Parpata,Pittapapada [8]

Figure: *Shahtara* (Fumaria Parviflora Lam) Stem and Leaves

Ethnobotanical Description

Macroscopic: The dried crude drug, sourced from the local market, is mostly broken and consists primarily of stem, root, and fruit fragments. The dried stem is yellowish-brown, 2-3 mm in diameter, and hollow inside. The outer surface has longitudinal ridges, while the inner surface is smooth. The stem has no distinct Odor but has a slightly bitter taste.[30]

Microscopic: The stem's cross-section is nearly circular in shape. The epidermis is a single layer of cutinized polygonal cells. Beneath the ridges, the epidermis is followed by 3-4 layers of thick-walled collenchymatous cells, which are in turn followed by 1-3 layers of tangentially elongated thin-walled parenchyma cells, containing rosette crystals of calcium oxalate. Typically, there is one rosette crystal per cell, though twin crystals may occasionally be observed. Beneath the parenchyma, clusters of sclerenchymatous cells are found in the cortical region. Numerous collateral vascular bundles are arranged in a ring, with indistinct phloem present. The xylem shows a variety of wall thickenings and consists of simple perforated vessels, tracheid's, and xylem parenchyma, along with tracheid fibres. The central part of the stem is occupied by pith, which consists of isodiametric, thin-walled cells with large intercellular spaces.[6]

Habitat

An agricultural weed in Persia.[6]In Tamil Nadu at elevated altitudes of up to 2700 meters in the Himalayas.[7]found in many parts of India from Indo-Gangetic plain and Nepal down to the Nilgiris mountain.[9,12,15]A weedy annual herb that grows wild in fields.[16]

Parts Used: Leaves, stem and whole herb.[6,10,12,13,15]

***Mizaaj* (Temperament)**: *Murakkabul Quwa* [5,17] Dry 2 & Moderately hot and cold [4,5,6,17]

***Af'aal* (Pharmacological Actions)**

Based on chemical composition, every medicine has one or more pharmacological effects. The pharmacological actions of *Shahtara.*

- *Muqawwi-i-Jigar* (Strengthens and protects the liver) [4,5,13,17]
- *Maney-wa-DafeyeTadiya* (Inhibits of bacterial growth) [4,5,17]
- *Dafe Daad wa Hikka* (Anti dermatophyte property) [4,5,17]
- *Muhallil-e-Auram* (Anti-inflammatory activity) [4,5,17]
- *Ma'an-i-Qay* (Antiemetic property) [4,5,13,15,17]
- *Dafi'-i-Humma* (Antipyretic) [4,5,6,12,13,15,17]
- *Mudirr-i-Baul* (Diuretic) [4,5,6,9,12,13,17]
- *Mushtahi* (Appetizer) [4,5,15,17]
- *Qatil-e-Kirm-e-Shikam* (Anthelmintic) [4,5,9,12,17]
- *Musaffi-i-Dam* (Blood purifier) [4,5,6,7,11,12,17]

***Mawaqa-I-Istemal* (Clinical Uses And Applications)**

- *Zehrele zakm* (Toxic wounds)[4]
- *Aatishak* (Syphilis)[6,9]
- *Suzak* (Gonorrhea)[6]
- *Kharish/Jarb -o-Hikka* (Itching)[6,11]
- *Daad* (Fungal infection)[11]
- *Amrazze Jildiya* (Skin Conditions)[4,5,15]
- *Saudavi Amraaz* (Melancholic Diseases)[4,5,17]
- *Bukhaar*(Fever)[4,5]
- *Qabz* (Constipation)[4,5]
- *Musaffi-i-Dam*(Blood purifier)[4,5,17]

Action Of *Shahtara* In Combination With Other Drugs.

➢ *Shahtara* when combined with *sirka* (Vinegar) it serves as an appetizer, reduces vomiting and nausea in *Balghami Amraaz*, and eliminates the Obstructions of *jigar* and *tihal* (liver and spleen).

➢ *Shahtara* along with *mehendi* (Lawsonia inermis) leaves used to minimize both moist and dry itching.

➢ *Shahtara* Along with *Haleela Zard*,(Terminalia chebula) used to treat melancholic diseases *Amraze Saudavviyah*.[5]

***Badal* (Substitute):** *Senna* (Cassia Angustifolia) and *Haleela Zard* (Terminalia chebula)[4,5,6,17]

***Muzir* (Toxic):** The kidneys, spleen, and lungs *(Kulliyah,Tihal,Shuaib)*[4,5]

***Musleh* (Correctives):** *Haleela Zard* (Terminalia chebula), *Leemu* (Citrus limon)& *Shehad* (Honey) for the spleen and kidneys and *Kasni* (Cichorium intybus) for the lungs.[4,5,17]

***Murakkabath* (compound formulations)**

- *Nuqoo-E-Shahtara* [18]
- *Itrifil-E- Shahtara* [18,19,20,21]
- *Arq -E-Shahtara* [19,22]
- *Habb -E-Musaffi Khoon*[19,21,22,23]
- *Arq Murakkab Musaffi Khoon Ba nusqa Kalan*[19,21]
- *Majoon-E-Shahtara*. [24]

***Miqdar-E-Khurak*(Dosage)**

Majun	1 tola to 10 tola,10.5 gm to 14 gm	BD [24,25]
Itrifil	7 masha-1Tola	OD [19]
Hab	500mg	BD [23]
Nuqoo	7 masha	OD [18]

Medicinal Uses And Chemical Constituents

Fumaria parviflora is used to treat pains, diarrhoea, flu, and liver conditions. When mixed with honey, the herb can be taken internally to prevent vomiting. A cold infusion of the plant is used to treat wasting diseases in children, help reduce fever, and alleviate constipation and indigestion. It also acts as a blood purifier for skin conditions and is applied externally for leukoderma and as a poultice for swollen joints. The dried plant is known for its anthelmintic, diuretic, and diaphoretic properties and is used in combination with black pepper to treat jaundice.[9,13]

Alkaloids

The main alkaloids found in Fumaria parviflora include protopine, cryptopine, dl bicuculline, aldumine, fumaridine, fumarizine, spiroisoquinoline, and d-hydrastine. In addition to these, the plant contains several minor alkaloids such as parfumidine, parfumine, coptisine, tetrahydrocoptisine, fumariline, fumarilicine, narceimine, 8 methoxydihydrosanguinarine, oxysanguinarine, fumariflorine, lastourvilline, N-methyl corydaldine, oxycoptisine, raddeanine, N-methyl-hydrastine, dehydrocheilanthifoline, narlumidine, papraine, and paprazine.[13]

Other Compounds

In addition to alkaloids, Fumaria parviflora contains tannins, fumaric acid, and other non alkaloidal compounds such as nonacosanol, sitosterol, 19-methyloctacosanol, and 3 methyloctacosanol, which have also been isolated from the plant.[9,13]

Pharmacological Effect/Activities

- **Hepatoprotective effect**

A methanolic extract of the plant yielded monomethyl fumarate, which showed significant protection against hepatotoxicity induced by carbon tetrachloride, paracetamol and rifampicin in vivo. In an in vitro screening using thioacetamide-induced hepatotoxicity ,the drug exhibited similar activity.[13]

➢ **Anti inflammatory effect**

Protopine showed smooth muscle relaxant activity in guinea-pigs, rabbits and albino rats and hydrocholeretic activity in anaesthetized dogs. L-tetra- hydrocoptisine showed antipsychotic (neuroleptic) activity in albino rats and mice. Narceimine, narlumidine, adlumidine and protopine nitrate exhibit anti-inflammatory activity.[7]

➢ **Antifungal Activity**

Protopine, 1-tetrahydrocoptisine, narlumidine, and narlumicine from Fumaria indica were tested against various spore-germinating plant pathogenic fungi. Narlumidine and protopine displayed the strongest antifungal activity.[13]

Conflict Of Interest: No conflict of interest

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