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Review Article

Suranjan Shireen (*Colchicum autumnale* L.): A review on medicinal utility from the perspective of Unani Medicine

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Abstract

Background: *Suranjan Shireen* (*Colchicum autumnale* L.), commonly known as autumn crocus or meadow saffron, holds a prominent place in Unani medicine for its therapeutic potential in musculoskeletal and inflammatory disorders. It is a well-documented medicinal plant in both traditional Unani literature and modern pharmacology.

Objective: This review aims to comprehensively explore the pharmacognostic features, phytochemical profile, therapeutic applications, and clinical relevance of *Colchicum autumnale* from classical and contemporary perspectives.

Methods: Classical Unani texts were examined alongside modern scientific literature to highlight the plant's historical uses and recent pharmacological insights.

Results: The principal bioactive compound, colchicine, exhibits potent anti-inflammatory and antimetabolic properties. Traditionally, the plant has been employed in the treatment of gout (*Niqras*), sciatica (*Irqun Nisa*), and chronic joint pain (*Waja'ul Mafasil*). Modern studies confirm its efficacy in managing gout, Familial Mediterranean Fever (FMF), and inflammatory conditions. However, due to its narrow therapeutic index and known toxicity, careful dosage regulation is essential.

Conclusion: The integration of traditional Unani knowledge with modern pharmacological evidence supports the safe and effective therapeutic use of *Colchicum autumnale*. Future research should focus on standardization, dosage optimization, and toxicity mitigation to ensure clinical safety.

Keywords: *Colchicum autumnale*; *Suranjan Shireen*; Unani Medicine; Gout, Colchicine.

1. Introduction:

Colchicum consists of the fresh and dried corms of *Colchicum autumnale* L., which belongs to the family Liliaceae ¹. The word "colchicum" is derived from Colchis, a region in Asia Minor where this plant commonly grows. Medicinal preparations believed to have been derived from species of *Colchicum* have long been known by various names, including 'colchicum', 'hemodactyl' (finger of Hermes), 'suranjan', 'articulorum' (soul of the joints), and 'ephemeron'. Several of these terms have been linked to *Colchicum autumnale*.

Dioscorides was aware of the poisonous nature of *Colchicum*, although it is uncertain whether the species he described corresponds to the one currently used in medicine. Despite its toxic properties, it was recommended for the treatment of gout by Arabian physicians. However, its use during classical and medieval periods remained limited due to widespread fear of its poisonous effects.

The use of *Colchicum* for articular pain was first recommended by Alexander of Tralles in the 6th century A.D. Later, it was introduced for the treatment of acute gout by Baron Anton von Storck in 1763. The corms of *Colchicum* were included in the London Pharmacopoeias of 1618, 1627, and 1639. Colchicine, the active alkaloid of *Colchicum autumnale*, was successfully isolated by Pelletier and Caventou in 1820 ^{1,2}.

Table 1: Vernacular names:^{12,13}

| English | Meadow Saffron, Autumn crocus ^{1,3} |
|---------|---|
| Arabic | Qalb ul arz, Akba ⁴ |
| Hindi | Barbari ¹²² , Jungli Singhara ⁴ |
| Persian | Haqeer, surangan ⁴ |
| Unani | Falhiqan, Aqimaroon, Babusa ⁴ |

Scientific classification:^{6,7,5}

| | |
|----------------|--|
| Kingdom | Plantae |
| Phylum | Magnoliophyta (also called Angiosperms) |
| Order | Liliales |
| Family | Liliaceae |
| Genus | Colchicum |
| Species | Common species include: Colchicum autumnale (most well-known for medicinal use) Colchicum luteum Colchicum speciosum Colchicum byzantinum Colchicum cilicicum |

2. Material and methodology:

The classical literature related to Suranjan Shireen (*Colchicum autumnale* L.), its temperament, medicinal properties, and traditional uses were gathered from the classical book of USM, and the information on Pharmacognosy, phytochemical and pharmacological activities was collected by browsing the internet (PubMed, Science-direct, Wiley Online Library, Google Scholar, Research Gate) etc.

3. Botanical description:

Habitat and Distribution: The plant is found across central and southern Europe, including the Netherlands, Denmark, Ireland, Poland, Spain, and Italy. It is particularly abundant in England, especially in Herefordshire, Hampshire, Oxfordshire, and

Warwickshire. Commercial cultivation is prevalent in Italy and Yugoslavia^{7,8}.

Mahiyat (Unani Descripton)

It is the root of a plant that typically grows on hilltops. During autumn, the plant produces white and yellow flowers that resemble saffron in shape, while its leaves are similar to those of Balboos and generally lie close to the ground^{9,10,11}. A sticky secretion is often found on the leaves, which adheres to the hands upon contact.

The stem of the plant grows to approximately one balisht (a traditional hand-span measurement) in length, and reddish-black fruits are borne on these stems¹¹. The root itself resembles a water chestnut. Among its various types, the variety that is hard and white—both externally and internally—is considered the best¹¹. In contrast, varieties that are red or black in color are regarded as toxic^{11,12}.

Modern Description:

This is a perennial herb that grows up to 30 cm tall, with flowers ranging from lavender to light pink. In autumn, the flowers project above the soil, with the flower tube being long and the ovary remaining below ground. In spring, the leaves emerge, and the capsule is raised above the ground as its stalk lengthens. For medicinal purposes, the corms should be harvested before offshoots develop, and these corms are then sun-dried⁷.

The entire corm is conical, measuring about 4 cm in length and 3 cm in width. One side of the corm is flat, while the other side is convex. At the apex, remnants of the previous year's flowering stem can be seen. At the base of the flat side, there is a cavity containing a bud, from which the new flowering stem and corm will develop the following year. Fibrous roots or their scars are visible at the base of the corm. The inner surface is white and fleshy^{7,13}.



Colchicum autumnale L.⁷⁻¹⁴

4. Properties in Unani classical text:

- **Temperament (Mizāj):** Hot 3⁰ and Dry 3⁰⁹

Hot 3⁰ and Dry 2⁰^{8,14}

- **Parts used (Ajza i mustsmila):** Corm¹⁶² and root^{7,8,9}

- **Therapeutic Dosage (Miqdar Khuraq):** 3-9 gm and in decoction up to 10 gm⁷

- **Adverse Effects (Mazarrat):**

It weakness the stomach and liver^{7,8,9,15}

It decreases the appetite and causes spasm⁸

It may cause alopecia, diarrhea, enterosis, myopathy, nausea and vomiting¹⁶

- **Correctives (Musleh):**

- Kateera, Qand safaid, Zafran and Amla^{7,16-18}

- **Badal (Substitutes):**

In arthritis; equal weight of henna leaves and half weight of Muqil¹⁴

Turbud (equal weight), Aftimoon (3rd part of its weight) and kharbaq safaid (10th part of its weight)^{7,19}

- **Important Unani formulation:**

Majoone Suranjan, habbe Suranjan, Raughane Wajaul mafasil²⁰

5. Phytochemical constituents:

The dried colchicum corm contains up to 0.6% of the toxic alkaloid colchicine^{7,8}. In addition to colchicine, it also contains other alkaloids such as colchicein, colchicoserin, and demecolcine. A small amount of starch is also present in the colchicum corm⁷.

6. Therapeutic uses in Unani:

Table 2: Medicinal Actions (Af'al)

| As per Unani literature | As per Ethno botanical literature |
|---|-----------------------------------|
| Mohallil (Antiinflammatory) ^{7,15,20} | Antiinflammatory ^{7,24} |
| Mulattif ⁷ | Antirheumatic ^{140 24} |
| Mufatteh Sudud (Deobstruent) ^{7,20,21,22} | Alternative ^{140 24} |
| Mushile balgham (Phlegmagogue) ^{20,21} | Diaphoretic ^{140 24} |
| Qate balgham az mafasil ²⁰ | Diuretic ^{8,20,24,25} |
| Muqawwie Bah (Aphrodisiac) ^{8,9,10,11,20,21} | Aphrodisiac ²⁴ |
| Musakkin Alam (Analgesic) ^{8,9,10,20,21} | Analgesic ⁷ |
| Mujaffife Qurooh ⁴ | Sedative ^{7,24} |
| Dast awar (Purgative) ^{4,23} | Drastic purgative ²⁵ |
| Jazibe akhlate lazjah ²⁰ | Emetic ^{7,25} |
| | Antitumour ²⁵ |

Table 3: Medicinal Uses (Istemaal)

| As per Unani literature | As per Ethno botanical literature |
|--|---|
| Niqras (Gout) ^{7,8} | Gout ^{7,24-27} |
| Irqun Nisa (Sciatica) ^{7,8} | Reduce pain ^{7,24} |
| Wajaul Mafasil (Arthralgia) ^{8,10} | Arthrosis ²⁴ , Rheumatism ^{24,25} |
| Zakhme Muzmin (Chronic wounds) ^{8,9,10} | Inflammations ^{7,24} |
| Bawaseere Andhruni (Internal piles) ⁹ | Senile enlargement of prostate ²⁵ |
| | Leukaemia ²⁴ |
| | Colic ²⁴ |
| | Obstinate constipation ²⁵ |

7. Pharmacological actions:

Activity in Familial Mediterranean Fever

Familial Mediterranean Fever (FMF) is an autosomal recessive disorder characterized by recurrent episodes of fever and serositis, typically lasting between 24 and 163 hours. Since 1972, colchicine has been the drug of choice for the prophylaxis of FMF attacks and FMF-associated amyloidosis^{27,28}.

Colchicine, a neutral alkaloid, is absorbed in the jejunum and ileum. It is metabolized by the liver, and only small amounts are excreted unchanged in the urine. The plasma half-life of colchicine is prolonged in patients with hepatic or renal impairment. Colchicine acts by preventing the activation of neutrophils through binding to β -tubulin, forming β -tubulin–colchicine complexes. This inhibits the assembly of microtubules and the formation of the mitotic spindle. Additionally, colchicine modulates the production of chemokines and prostanoids, and inhibits the expression of adhesion molecules on neutrophils and endothelial cells.

The minimal daily dose in adults is 1.0 mg/day, although no standardized dosage has been established for children. Due to its antimetabolic effects at high concentrations in vitro, colchicine may interfere with male and female fertility and potentially affect the growth of children. However, current guidelines recommend its continued use in FMF patients due to its efficacy and the rarity of significant side effects²⁸.

Fatal Poisoning Activity

Colchicum autumnale, commonly known as autumn crocus, contains the alkaloid colchicine, which possesses antimetabolic properties. A 76-year-old man presented with nausea, vomiting, and diarrhea approximately 12 hours after ingesting *Colchicum autumnale*—mistaken for wild garlic (*Allium ursinum*)—with a background of alcoholic liver disease and renal insufficiency. Upon hospital admission, laboratory findings indicated dehydration.

By the second day, the patient became somnolent and developed respiratory insufficiency. An echocardiogram revealed heart dilation with diffuse hypokinesia and elevated troponin levels. The respiratory condition worsened due to pneumonia, confirmed by chest X-ray and later autopsy. Additional laboratory tests indicated rhabdomyolysis, coagulopathy, and progressive deterioration of renal and hepatic function. Toxicological analysis detected colchicine in the patient's urine (6 μ g/L) and serum (9 μ g/L) on the second day. Supportive therapy included hydration, vasopressors, mechanical ventilation, and antibiotics. Despite these measures, the patient succumbed to asystolic cardiac arrest on the third day²⁹.

Activity in Gout

Colchicine is effective in controlling acute gout attacks by inhibiting the activation of the NACHT-LRR-PYD-containing protein (NLRP3) inflammasome triggered by monosodium urate crystals. This leads to suppression of caspase-1 activation, interleukin-1 β (IL-1 β) processing

and release, and reduced expression of L-selectin on neutrophils³⁰.

8. Future perspective and conclusion:

Suranjan Shireen holds a pivotal place in Unani medicine due to its robust anti-inflammatory and analgesic properties, especially in musculoskeletal disorders. The presence of colchicine and related alkaloids provides a strong scientific basis for its traditional uses. Despite its proven therapeutic efficacy, colchicine's toxicity warrants stringent standardization of dosage and careful patient selection. Future research should focus on developing safer derivatives or formulations that minimize toxicity while preserving efficacy. Additionally, clinical studies rooted in traditional formulations can provide new insights into its broader pharmacological potential, including anti-tumor and immunomodulatory actions.

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