INDO AMERICAN JOURNAL OF PHARMACEUTICAL RESEARCH

PHYTOCHEMICAL AND PHARMACOLOGICAL REVIEW OF *SURANJAN SHIREEN* (*Colchicum autumnale*)

Shahid Suhail*, S. Shakir Jamil, Shazia Jilani, Shabnam Ansari, Amjad W Yousuf
Department of Moalajat, School of Unani Medicine, Jamia Hamdard, New Delhi, India.

ARTICLE INFO

Article history
Received 23/04/2017
Available online
10/05/2017

Keywords
Colchicum,
Suranjan Shireen,
Unani Medicine,
Colchicine,
Autumn Crocus,
Wild Saffron.

ABSTRACT

Colchicum autumnale has been known as *Suranjan shireen* in Unani Medicine. It belongs to the family Liliaceae and commonly known as the autumn crocus, a wild saffron and naked lady. It has been used in Unani system of medicine for various therapeutic actions as *Mushil* (Purgative), *Mushil-e-Balgham /Mukhrij-e- Balgham* (Phlegmagogue) *Qabiz* (Constipative), *Muhallil* (Resolvent), *Mufatte-e-Sudad* (Deobstruent) *Muqawwi-e-Baah* (Aphrodisiac) *Mujaffif-e-Qurooh* (Desiccant ulcer) *Musakkin-e-Alam/ Dafi'-e-Alam* (Analgesic), *Dafi'-e-Niqris* (anti-gout, to relieve inflammation and pain of acute gout), *Mukhaddir* (Anaesthetic), *Muharrik e-Baah* (Stimulant of sex) etc. in Unani medicine since centuries. The present article has provided a review of pharmacological actions and therapeutic uses of *suranjan shireen* in Unani and ethno-botanical literature in the light of available pre-clinical and clinical experimental data on *Colchicum autumnale*.

Corresponding author
Dr. Shahid Suhail
MD Scholar
Department of Moalajat, School of Unani Medicine,
Jamia Hamdard, New Delhi, India.
suhail.shahid8@gmail.com

*Please cite this article in press as **Dr. Shahid Suhail** et al. Phytochemical and Pharmacological Review of Suranjan Shireen (Colchicum Autumnale). Indo American Journal of Pharmaceutical Research.2017:7(04).*

INTRIDUCTION

Colchicum (*suranjan*) has been a herbal drug of therapeutic importance since centuries. Several classical Greek physicians from Nicander of Colophon, over Dioscorides, Pliny the Elder and Galen, to Alexander of Tralles. [1] 'Colchicum' is a root of a perennial plant of family Liliaceae, available in the Indian market with a name of *Suranjan*. *Colchicum autumnale* is actually named for the land of Colchis at the eastern tip of the Black Sea. The first detailed descriptions and drawings of the plant, known then as "Colchicon," was documented in the first century AD by Dioscorides, father of botany in Unani medicine. [2, 3, 4] Its name ''autumn crocus'' refers to its flowering time in autumn, whereas the leaves and capsules appear above the ground surface in the following April. The plant remains underground during the winter (November until March) and summer (July) dormancy periods. C. autumnale has to allocate and store photoassimilates during a short period from April to June, which have to support it for the rest of the year [5] Baron Anton von Storck of Vienna in 1763 has demonstrated the plant's specificity for gout and ushered in the modern era of *Colchicum* therapy. [6, 7] Later the alkaloid colchicine was isolated from the plant autumn crocus (*Colchicum autumnale*) in 1820 by Pelletier and Caventou. [8, 9] *Suranjan shireen*, (*Colchicum autumnale*) is also known with the common name of autumn crocus, wild saffron and naked lady. In southern Karnataka, it is commonly known as *gowri gedde*. It contains alkaloid colchicine that is antimitotic, blocking the mitosis by preventing DNA synthesis and tubulin polymerization. [10] Meadow saffron (*Colchicum autumnale* L., Liliaceae is a non-domesticated medicinal plant, rich in alkaloid. Seeds synthesize and accumulate colchicine and colchicoside. These alkaloids are used in medicines mainly for their anti-gout and muscle relaxant properties. [11]

Plant of *Suranjan shireen*, blooms in September and fruits in June. Every year a mother corm produces one or sometimes, two daughter corms. While the upper part of the corm is generally located into the soil between 10 and 20 cm, the fine white roots grow deeply until about 80 cm from the lower part of the corm. The phase of rooting begins in October and lasts until the beginning of January. In spring, higher temperatures induce the emergence of leaves, and then of the capsules. The harvest of seeds is generally made in June just before the dehiscence of the capsules. Influence of chemical characteristics of soil on mineral and alkaloid seed contents of *Colchicum autumnale.* [12]

Surajeen shireen is a drug of choice for arthritis in Unani medicine. [13, 14, 15] Beside its usage in musculoskeletal disorders, it has also been used in treatment of various ailments in Unani system of medicine since decades. The present article has provided a monographic review on the scientific classification, physiochemical description, pharmacological actions, therapeutic usage, dosage and adverse effects of *Suranjan shireen* (*Colchicum autumnale*) with special reference of Unani medicine.

VERNACULAR NAMES

Language	Names
Unani	*Falheeqan, Aqeemaroon* [13] *Balboosa* [13, 14] *Falheeq, Asmaroon, Qabaroon* [16]
Arabic	*Ukba, Laeba bararbaria* [13] *Qalb-ul-arz* [13,16] *Suranjan hulo* [24, 26, 27]
Persian	*Haqeer, Surangan* [13] *Suranjan shireen* [26, 27]
Hindi	*Barbari, Jangli singara* [13,16, 27]
English	Colchicum, Meadow Saffron [10]

SCIENTIFIC CLASSIFICATIONS.

Rank	Scientific Name and Common Name
Kingdom	Plantae– Plants
Subkingdom	Tracheobionta– Vascular plants
Super-division	Spermatophyta– Seed plants
Division	Magnoliophyta– Flowering plants
Class	Liliopsida– Monocotyledons
Subclass	Liliidae
Order	Liliales
Family	Liliaceae– Lily family
Genus	*Colchicum* L.– colchicum
Species	*Colchicum autumnale* L. – autumn crocus [17]

PLANT DESCRIPTION

The plant was first found growing in colchis (a part in the Black sea) hence the name 'colchicum' was given to the plant. The flowering takes Place in autumn, hence the name autumnale was given. For cultivation only fresh seeds are used which germinate up to about 30% while dry seed only up to 5%. During august to October the plant products flowers which are very similar to saffron and have beautiful liliac or pale colour. From June to July brown fruits are collected before the dehice. When ripe, seeds become dark in colour and are covered by a sweet saccharine secretion. Colchicum seeds are derived from amphoitrophous ovules and have a short raphe. Dried corms, root, tuber and seeds are used for various medicinal purposes. [18]

Morphology

Size : 2 to 3mm in diameter
Shape : globular, with strophiole on one side which is the parenchymatous growth of the raphe.
Outer surface : Dark reddish-brown, pitted very hard.
Endosperm : Large, very hard, oily.
Embryo : Small, embedded at one end near the surface of the seed.
Odure : None
Taste : Sweet [18]

CHEMICAL CONSTITUENTS

Colchicine, colchicoside, 3-demethylcolchicine [19, 20] are chemical constituents where Colchicine, the main alkaloid of *Colchicum autumnale* L. (Liliaceae), is a useful agent in the treatment of acute attacks of gout. [21] Colchicine is not unfamiliar to the medical world, as it has been utilized in the treatment of gout and has been investigated in many other conditions, including familial Mediterranean fever [22, 23] cirrhosis and Sweet's syndrome [22] asthma, liver fibrosis, behçet's disease and pericarditis with effusion. [23] More recently, allocolchicines (derivatives of colchicine) and other analogues have shown some exciting effects in cancer cells. This is largely due to allocolchicine's ability to halt mitosis by inhibiting tubulin polymerization into microtubules hindering the progress of cells through the cell cycle and leading to the induction of apoptosis. This inhibition of microtubule formation is especially useful in cancer therapy because cancer cells proliferate rapidly and uncontrollably. [22]

TEMPERAMENT (*MIZAJ*)

Hot3 & Dry1 [10] Hot3 & Dry2 [13, 14, 27] Hot2 & Dry2 [24, 26] Hot3 & Dry3 [16, 25].

PHARMACOLOGICAL ACTIONS.

S. No.	Pharmacological actions	References
1.	*Mushil* (Purgative)	[13,14, 15, 16, 24]
2	*Mushil-e-Balgham* (Phlegmagogue)	[13, 24, 27]
3.	*Qabiz* (Constipative)	[13, 14, 16]
4.	*Muhallil* (Resolvent)	[14, 16, 25]
5.	*Mufatteh-e-Sudad* (Deobstruent)	[14, 16, 27]
6.	*Mukhrij-e- Balgham* (Phlegmagogue)	[26]
7.	*Muqawwi-e-Baah* (Aphrodisiac)	[13, 14, 15, 16, 24, 26]
8.	*Mujaffif-e-Qurooh* (Desiccant ulcer)	[13, 14, 15, 16]
9	*Musakkin-e-Alam* (Analgesic; restoring normal sensation)	[12, 24]
10.	*Dafi'-e-Niqris* (Anti-gout relieve inflammation and pain of acute gout)	[13]
11.	*Mukhaddir* (Anaesthetic)	[16]
12	*Muharrik e-Baah* (Stimulant of sex)	[14, 27]

THERAPEUTIC USES.

S. No.	Therapeutic uses	References
1.	*Nuzool-al-Maa* (Cataract)	[13]
2.	*Bawaaseer-e- Dakhli* (Internal Piles / Haemorrhoids)	[13, 16]
3.	*Waja'-al-Mafaasil* (Arthralgia)	[13, 14, 24, 26]
4.	*Niqris* (Gout)	[13, 14, 15, 16, 24, 26, 27]
5.	*'Irq al-Nasa* (Sciatica)	[14, 16, 24, 26, 27]
6.	*Muzmin Quruh* (Chronic ulcers)	[16]
7.	*Muzmin Juruh* (Chronic wounds)	[16]
8.	*Warm-e-Balghami* (Phlegmatic swelling)	[13,16]
9.	*Kirm-e-Shikam* (Intestinal worm)	[16]
10.	*Habb-al-Qara'* (Tape Worm)	[16]
11.	*Yaraqaan* (Jaundice)	[14, 16, 27]
12.	*Amraaz-e-tehaal* (Diseases of spleen)	[13,16, 27]
13.	*Waj-al-Azm* (Bone Pain)	[16, 27]
14.	*Waram-e-Sulbiyya* (Sclerotitis)	[16, 24]
15.	*Jamee Waja'-al-Mafaasil* (All types of Arthralgia)	[13, 27]

ADVERSE EFFECTS (*MUZIR ASRAAT)*

Injurious to stomach and liver [26, 27] tenesmus, loss of appetite, [14] Weakness of stomach, Groin / Inguinal region [16] etc.

THERAPEUTIC DOSAGE (*MIQDAR-E-KHURAK)*

2.25-3 g.[13] 3, 4, 9g [14] Mixed other drugs 2 g, 3-6 g [14] *Joshaanda* (Decoction) 10-17 g [14]; 3.5g Mixed other drugs 2.25g, 4.5g ,3.5-6.75g *Joshaanda* (Decoction) with *Gul-e-surkh* & *maveez* 10.5-17.5g. [16]

CORRECTIVE *(MUSLEH*)

Kateera (*Astragalus gummifer*); Qand Safed (Granular sugar); and Zafran (*Crocus sativus* Linn.) [14, 16, 24, 26, 27] Sonth (*Zingiber officinale*) Fillfil siyah (*Piper nigrum* Linn), [27] Amla murabba (*Emblica officinalis* Gaertn) [14]

SUBSTITUTE *(BADAL*)

S. No.	Alternative drug	References
1.	Turbud/Nasaut (*Operculina turpethum*)	[14, 26]
2.	Afteemoone Hindi (*Cuscuta reflexa* Roxb.)	[14]
3.	Kharbaq abyaz (Veratrum viride Ait.)	[14, 18]
4.	Hina/Menhdi (Lawsonia alba)	[14, 16, 24, 27]
5.	Muqil (*Commiphora mukul*)	[16, 27]
6.	Buzidan (*Orchis laxiflora* Lam.)	[16]

COMPOUND FORMULATIONS IN UNANI MEDICINE

Majoon-e-suranjaan [12, 24, 25]; *Habb-e-suranjaan* [12, 24, 25]; *Roghan-e- Waja'-al-Mafaasil* [12, 14, 24, 25] etc.

CONCLUSION

Suranjan shireen is Unani name of *Colchicum autumnale*, a type of lily plant with pale flowers. It is found growing on grassy slopes in the temperate Himalayas, Afghanistan and Turkestan. The corm or rhizome, root and seeds of the plant are used for therapeutic purposes. It has been traditionally used for headache, arthralgia, gout, rheumatism, worm infestation, piles, chronic ulcers, constipation, diseases of the liver and spleen etc. Drug has been reported to be injurious for liver and stomach in Unani medicine. In addition, *Suranjan* is included in list of poisonous plants of India. It must be used with cautions.

CONFLICT OF INTEREST

None declared

SOURCE OF SUPPORT

Nil

REFERENCES

1. Larsson S, Ronsted N. Reviewing colchicaceae alkaloids perspectives of evolution on medicinal chemistry. Current topics in Medicinal Chemistry. 2014; 14:274–89.
2. Imazio M, Brucato A, Trinchero R, Spodick Y, Adler Y. Colchicine for pericarditis: hype or hope?. European Heart Journal. 2009; 30:532–539
3. Malkinson FD. Colchicine new uses of an old, old drugs. JAMA. 1982; 118(7):453-457.
4. Ali SS. Unani adviya mufreda. New Delhi; National council for promotion of Urdu language. 2004; 191-192.
5. Winter S, Penker M, Kriechbaum M. Integrating farmer's knowledge on toxic plants and grassland management: a case study on colchicum autumnale in Austria. Biodivers Conserv. 2011; 20:1763–87.
6. Bassak P, Chatterjee A. Oral colchicine in chronic plaque psoriasis. 1993; 59(4):168-171.
7. Wallace SL. Colchicum the panacea, Bull. N. Y. Acad. Med. 1973;49(2):130-135
8. Dembitsky VM. Bioactive cyclobutane-containing alkaloids. J Nat Med. 2008;62:1–33
9. Deftereos S. Colchicine and the Heart; Journal of the American College of Cardiology. 2013; 62:20.
10. Rao R. Fatal Poisoning With Colchicum Autumnale: A Case Report. Research Journal of Pharmaceutical, Biological and Chemical Sciences**.** 2016; 7(1)7:1760-62.
11. Poutaraud A, Girardin P. Influence of chemical characteristics of soil on mineral and alkaloid seed contents of *Colchicum autumnale* environmental and experimental botany. 2005; 54:101–108
12. Poutaraud A, Girardin P. Seed yield and components of alkaloid of meadow saffron (Colchicum autumnale) in natural grassland and under cultivation. canadian journal of plant science. 2002; 1:23-29.
13. Ibn-e-Baitar. Al-jamiul mufradat al advia wal aghziya [Urdu Translation]. Vol.3. New Delhi: CCRUM. 1999; 96-98.
14. Ghani N. Khazainul Advia. Tarjumn-u-Tib. Pakistan: Main Bazar Qasur Pura Lahaur. YNM; 916-917.
15. Razi Z. Kitab-al- havi (Urdu translation). Vol. 22. New Delhi: CCRUM. 1999; 25-26.
16. Khan MA. Muheet-i Azam. Vol.1. New Delhi: CCRUM. 2014; 194-197.
17. USDA. Colchicum. [Accessed 2016]. Available from: https://plants.usda.gov/gallery/standard/coau4_001_shp.jpg
18. Shah CS., Qadri JS. A textbook of pharmacognosy. Ahmadabad: B.S. Shah Prakasan; 1995-96; 381-383.
19. Poutaraud A, Girardin P. Alkaloids in Meadow Saffron, *Colchicum autumnale* L. Journal of Herbs, Spices & Medicinal Plants. 2008;63-79.

20. Ellington E, Bastida J, Viladomat F, Codina E. Supercritical Carbon Dioxide Extraction of Colchicine and Related Alkaloids from Seeds of *Colchicum autumnale.* Phytochemical analysis. 2003;14:164–69
21. Rueffer M, Zenk MH. Micro-some mediated transformation of *O* methylandrocymbine to demecolcine and colchicine. Federation of European Biochemical Societies. 1998;438:111-113.
22. Larocque K, Ovadje P, Djurdjevic S, Mehdi M, Green J, Pandey S. Novel Analogue of Colchicine induces selective pro-death autophagy and necrosis in human cancer cells. PLoS One. 2014;9(1):e87064
23. Gründemann C, Diegel C, Sauer B, GarciaKäufer M, Huber R. Immunomodulatory effects of preparations from Anthroposophical Medicine for parenteral use. BMC Complement Altern Med. 2015;15:219
24. Kabeeruddin M. Makhzan-ul-mufradat. Delhi: Kohinoor book depot Jama Masjid; 2000. P. 363-564.
25. Ansari MY. Munafe-ul-mufradat. New Delhi: Eijaz Publishing House.2012; 255-256.
26. Sargodhwi MA. Makhzan-ul-mufradat. New Delhi: Eijaz Publishing House. 2012; 152.
27. Hakeem M. Bustan-ul-mufradat. New Delhi: Idara Kitabush-Shifa. 1999; 207.

5487847845**1170446**