

# Suranjan (*Colchicum luteum* Baker) – An Old Medicinal Plant

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## Abstract

The drug Suranjan commonly used in Unani System of Medicine (USM) today. Mostly the dry extract of underground part of *Colchicum luteum* Baker. Chemical analysis showed that *Colchicum luteum* Baker contained many biologically active components such as 3-demethylcolchicine, 2-demethylcolchicine, N-deacetyl-N-methylcolchicine, alpha & beta-lumicolchicine, N-deacetyl-N-formylcolchicine, colchicines, colchamine, colchicine, colchocerine, and demecolcine. Unani physicians have been using this drug as digestive, analgesic, aphrodisiac, sedative, carminative, diuretic, deobstruent, laxative and very good anti-inflammatory agent. Its analgesic and potent uricosuric effect have been proved. Colchicine is the chief active principle of Suranjan and a well known drug to treat the gout. Hence, this drug having a momentous position in Unani system of medicine and text.

Its references in Ayurvedic literature is not in abundance because it is first time added to Ayurvedic literature in 1935 A.D. by Acharya Shankar Dutt Gond. The previous pharmacological studies showed that *Colchicum luteum* Baker possessed anti-oxidant, antifungal, anti-inflammatory, and antibacterial properties. This review was designed to lime light the *Colchicum luteum* Baker by describing its palliative, therapeutic and others uses.

**Keywords:** Therapeutic uses, *Colchicum luteum* Baker, Anti-inflammatory, Unani

## Introduction

Suranjan is the oldest drug known to mankind and still the most widely practiced form of medicine in the world today. There are roughly 70 species in this genus & 2 are native of India. The plants under this genus are corm bearing herbs with short scape.<sup>1,2</sup>

## Plant Profile

**Botanical Name:** *Colchicum luteum* Baker<sup>2,3,4</sup>

**Common Name:** *Colchicum*, Golden Collyrium<sup>2,5,6</sup>

**Family:** Liliaceae<sup>2,3,4,6</sup>

## Vernacular Names

**Arabic:** Suranjan, Suranjanulmur<sup>2,5,7,8</sup> **Persian:** Suranjan talkh<sup>4,7</sup> **Hindi:** Barbari, Jungali Singhara, Hirantutiya, Surinjan, Haran tutiya<sup>4,6,7,8</sup> **Unani:** Falhaqeen, Bilboosa, Aqeemaroon<sup>209</sup> **Sanskrit:** Hiranyatutha<sup>4</sup> **English:** Golden Collyrium, Yellow Saffron<sup>6</sup> **Kashmiri:** Virkum<sup>4,6</sup>  
**Part Used:** Corm and Seeds<sup>4,6,8,9,10</sup>

## Temperament (Mizaj)

Hot 3° & dry 2°<sup>7,9,11,12</sup>

Hot 2° & dry 2°<sup>8</sup>

Hot 3° & dry 3°<sup>13</sup>

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## Geographical Distribution

It is an annual herb commonly found on the edge of forests or in open grassy places and temperate region of North West Himalayas from Murree Hills (Pakistan) to Kashmir and Chamba (India) at altitudes ranging from 600-2700 m.<sup>2,4,6,14,15</sup>

It is also found in Afghanistan, Turkey, Pakistan, Hind Kush Mountains, Punjab and areas of Himachal Pradesh and as well including Nepal, Sikkim. The plant usually existing where climatic condition is low temperature below 15°C<sup>2,16</sup>.

## Morphology (Mahiyat)

Suranjan is an annual herb with an underground dark brown to blackish-brown Scaly Oval shape Corm. Leaves are six to twelfth inch in length, lorate, mostly linear-oblong or oblanceolate or obtuse appearing with the flowers, short at flowering time, tip is rounded. Flowers are one to two inch in length & 2.5- 3.8 in diameter, hermaphrodite (pollinated by bees, flies, self). Perianth is golden yellow in color and funnel-shaped<sup>2,10,17</sup>. Stamens are 6 in number. Ovary 3-celled, sessile having three large styles. Fruits are 0.5-1 inch in length contain seeds. Seeds are 2-3 mm in diameter, oval shaped, light brown to white in color and having a bitter taste.<sup>2</sup>

## Traditional uses

Dioscorides in first century A.D. stated that Greek physicians used the plant from which colchicines is derived as a therapeutic agent for gout. The Arab physicians of middle age also used the colchicum to manage the acute stage of gout. In India and Africa different formulations of colchicum are still used traditionally to cure the gastroenterological, musculoskeletal and skin problems.<sup>18,19</sup>

## Chemical constituents

Seeds and corm of *Colchicum luteum* Baker contained more alkaloid colchicines than other plant parts. The aerial parts (including flowers) showed the presence of 0.70 % total alkaloids. The alkaloids identified were colchicines (0.20 %), mixture of colchicines & N-formyl-desacetylcolchicine, mixture of 2-and 3-demethylcolchicine & 3-demethyl-γ-limicolchicine.<sup>1,6</sup>

The seeds & corm of Suranjan also contain a large amount of starch, a small quantity of oily resinous matter & a bitter alkaloid phenethylisoquinoline. The alkaloid colchicines content in the air dried corms of *Colchicum luteum* Baker was found to be from 0.21 % to 0.25 % and in the seeds from 0.41- 0.43 per cent. The alkaloid colchicines is liable to be affected by high temperature.<sup>2,4,6</sup>

The phenolic compounds find out from colchicum are 4-hydroxybenzoic acid (vanilic acid), 3-(3-hydroxyphenyl)

-2- propanoic acid (Coumaric acid), Caffeic acid & 3, 4, 5, 7 Tetra hydroxyl flavones (Luteolin).<sup>2</sup>

## Pharmacological actions (Afa'al)

It has stimulant, laxative, bile expectorant, diuretic, anti-inflammatory, emetic, sedative, analgesic, aphrodisiac, carminative & anti-cancerous actions.<sup>2,4,6,20,21,22</sup>

Suranjan is irritant to the skin causing hyperemia so it is used externally to treat the skin troubles like leprosy and internally it is primarily used in gouty arthritis.<sup>2</sup>

## Medicinal uses (Mahalle Istemal)

The parts medicinally uses are- dried corm, seeds, Hiranaya-Tuttha (a dark brown dry extract of Suranjan) & fresh flowers.<sup>2,4,6</sup>

## Corm

The corm possesses a bitter and acrid taste & is used in Inflammation, Swelling, Pain, Gout, Sciatica, Rheumatoid arthritis, Osteoarthritis, Wound healing and Indigestion. It also holds diuretic properties hence it is used in urinary tract linked troubles such as stones, urinary tract infection. It is a mild laxative & use in relieving from constipation. The corm is used for liver and spleen disorders and it is also a good blood purifier, hence used in skin & blood related problems like leprosy.<sup>2,4,6</sup>

## Hiranaya-Tuttha

It is mainly used in acute flare of gout & rheumatism.<sup>2</sup>

## Seeds

Seeds (bitter & acrid in taste) possess an Analgesic, Sedative, Anti-inflammatory, Astringent, Carminative, Aphrodisiac, Alterative, Aperient, Laxative & Blood purifier properties, therefore it is used in gout, rheumatism, neuralgia, leukemia, pruritis, liver & spleen ailments, sexual debility, lumbago & sciatica.<sup>2,6</sup>

## Flowers

Flowers have colchicines and democolchicine. Both of these are uses in the management of tumors & in certain forms of leukemia like chronic myelocytic leukaemia. Flowers are also used for treating weakness.<sup>2,6</sup>

## Therapeutic Uses

1. Habb-e-Suranjan & Majoon-e-Suranjan are polyherbal formulation used in Unani System of Medicine for the treatment of Gouty & Rheumatic arthritis and Sciatica.<sup>8, 23</sup>
2. According to Zakariya Rhazi (Rhaze's) following preparation give immediate relief in acute gout-Zeera

- Syah (Cuminum cyminum) 4 gm, Tukhm-e-Karafs (Apium graveolens Linn) 4 gm, Aneesoon (Pimpinella anisam) 4 gm, Zanjabeel (Zingiber officinale) 4 gm, Mastagi (Pistacia lentiscum) and Filfil (Piper nigrum) 1.5 gm, Suranjan (Colchicum luteum Baker) 18 gm, make fine powder of these drugs & make pills, dose is 4 gm.<sup>24</sup>
3. Zimad of Suranjan with Zafran (Crocus sativus Linn) may be applied on affected part. It reduce the pain & swelling.<sup>20</sup>
  4. The dried powdered of corms is very effective in healing the wounds, it should be sprinkled on the affected parts & promotes cicatrisation.<sup>9,11,25</sup>
  5. The drug is widely used for internal hemorrhoids. For this purpose, a cloth soaked with cow / goat milk & paste of Suranjan (1 gm) is applied on piles mass, it necroses & falls down in due time.<sup>9,11,25</sup>
  6. The alkaloid colchicines obtained from this plant is used orally in tablet form for acute gout, benign hypertrophy of prostate, gonorrhoea, leukemia, cancer, & Mediterranean fever. It relieves the constipation & help in expulsion of tapeworms. It is also used in liver & spleen troubles & is beneficial in jaundice. It has been used widely for gout, sciatica, & joints pain since ancient time. It causes expulsion of humor causing the disease.<sup>6,7,9,11,26,27</sup>
  7. It also increased the sexual stamina in male when used with Zingiber officinale & Piper Nigrum.<sup>7,9,11</sup>
  8. It is also beneficial in treating the different skin disease.<sup>6</sup>
  9. The extracted Colchicines used to modify the genetic makeup of different plants in an attempt to get new & improved varieties.<sup>2</sup>
  10. It is widely employ for rheumatic complaints especially gout & also recommended for its cathartic and anti-emetic effects.<sup>11,27</sup>
  11. Colchicines has antimetabolic effect & cause metaphase arrest by binding to microtubules of mitotic spindle.. it was tried for cancer chemotherapy but abandoned due to toxicity.<sup>28</sup>

## Precaution

Although Suranjan is very beneficial for gout but it has harmful effect on stomach, induce vomiting, decrease appetite & can cause severe irritation to intestine. Hence it is advisable to use the drug with Zanjabeel (Zingiber officinale), Filfil Syah (Piper nigrum) & Zeera (Cuminum cyminum) to protect the stomach from the ill effect of Suranjan.<sup>24</sup>

In overdose, it may cause nausea, vomiting, watery or bloody diarrhea, abdominal cramps, convulsion and general paralysis. Accumulation of drug in intestine & inhibition of mitosis in its rapid turnover mucosa is responsible for the toxicity. Colchicines in large doses produce CNS depression, intestinal bleeding, depresses the respiratory centre and death may occur due to muscular paralysis & failure of

respiratory centre. Chronic therapy with colchicines is not recommended because it causes aplastic anemia, agranulocytosis, myopathy & loss of hair.<sup>28</sup>

At therapeutic dose, colchicines act as a very good anti-inflammatory agent & pain killer, as it impede the migration of macrophages towards the inflamed joint, involved in acute attack of gout. Long term uses of colchicines can cause kidney and liver damage. The toxic dose in humans is about 10 mg, while 40 mg would always be lethal & leads to respiratory & CVS disturbance within a few days.<sup>2,28</sup>

## Contraindication

Pregnancy and lactation due to its teratogenic effect.<sup>15</sup>

## Research Studies

**Antioxidant Effect:** The ethanolic extract of colchicum luteum Baker was investigated phytochemically & found that the colchicum shows antioxidant effect. The highest effect was displayed by chloroform fraction 91%, while the overall range was found 56-91%.<sup>2</sup>

**Anti fungal and Anti Bacterial Effect:** The methanolic extract of corms & its subsequent fraction were studied for anti bacterial and anti fungal properties. The result showed that crude extract & subsequent fraction had moderate to superb anti fungal activity against tested pathogens. The highest anti fungal activity was demonstrate against trichophyton longifusus, up to seventy five percent, & microsporum canis, up to eighty five percent whereas the crude extract and other fractions showed mild to moderate anti bacterial properties in an anti bacterial bioassay with highest anti bacterial activity (58%) against bacillus subtilis.<sup>29</sup>

**Enzyme Inhibition activity:** The crude methanolic extract & different other fraction of colchicum luteum Baker such as chloroform, ethylacetate, n-butanol, and aqueous were investigated against acetylcholinesterase, lipooxygenase, & urease enzymes. The result showed that crude methanolic extract had a significant enzyme inhibitory activity (89%) against lipooxygenase, while low to considerable activity (29- 61%) against acetylcholinesterase and no activity against urease.<sup>2</sup>

**In Cancer treatment:** The antimetabolic property of Colchicines utilizes in cancer for the dispersal of tumors and for treatment of different neoplastic conditions. In cancer cells division become very faster. Hence Colchicines is very effective compound in cancer treatment because it had antimetabolic activity & stop cell division.<sup>26,28,30</sup>

## Conclusion

It is concluded that Colchicum luteum Baker has been used by renowned Unani Physicians since ancient times to treat

the various rheumatic disorders. Their main actions are anti-inflammatory, sedative, analgesic, blood purification & helps in reducing uric acid accumulated around the joints which forms the mainstay for the treatment of gout. Along with this, the drug has many other uses which are supported by various researches done by researchers all over the world. Therefore the drug is safe & significantly effective in case of gouty arthritis.

**Conflict of Interest:** None

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