

Medicinal and Toxic properties of Opium, Papaver somniferum L.

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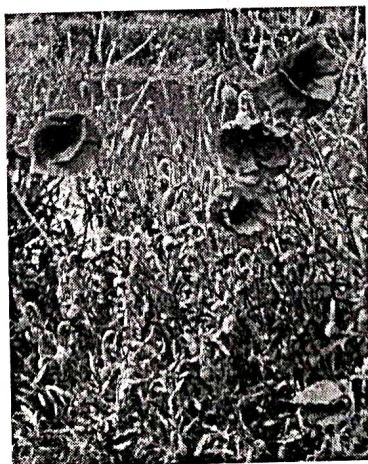
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Abstract -

Poppy is an annual erect herb. There are 25 opium alkaloids identified in the raw opium. Of them, morphine, thebaine, codeine, narcotine and papaverine are important; morphine is by far the most important. It has many medicinal as well as poisonous properties. Poppy based medicines are considered the most effective way of relieving severe pain, analgesic, astringent, hypnotic, bactericidal, calmative, carminative, demulcent, emollient, expectorant, hemostat, hypotensive, hypnotic, narcotic, nervine, sedative, antispasmodic, sudorific, toxic, diaphoretic. It is stimulant that induces euphoria and helps get rid of anxieties tensions, fears and inhibitions. Opium is also the source of the toxic and extremely habit-forming narcotic heroin or diamorphine, prohibited in some countries. It can cause stupor, coma, shallow and show breathing, respiratory and circulatory depression, excitement, constipation and excessive salivation.

Keywords : Narcotic, Poppy, Sedative, Analgesic.



Introduction -

Taxonomic Description

Common name - Aphim, Poppy, Opium Poppy. Poppy is a native of the western Mediterranean region, introduced into India in the early sixteenth century. India produces about 70 per cent of the world's production and 90 per cent of it is exported annually. The plant can be grown under a licence issued by the Excise Department and, as such, its cultivation is restricted to about 24,000 hectares in the districts of Neemuch, Mandsaur and Ratlam in Madhya Pradesh; in Faizabad, Bara Banki, Bareilly and Shahjahanpur in Uttar Pradesh, and in Chittoor, Jhalawar and Kota in Rajasthan.

Description - The opium poppy originated from Asia minor or from the western Mediterranean region. *Papaver somniferum* L. is an erect herbaceous annual plant or biennial herb, 50-150cm tall, glabrous or glaucous sometimes with a few spreading bristles and filled with white latex. Leaves are large, solitary, alternate, ovate to oblong, green, margins wavy, incised, and lobed or toothed irregularly, teeth sometimes tipped with a rigid hair, clasping at base, glaucous, the lower ones pinnatifid and possess a blue tinge. Flowers terminal large bright red or white, actinomorphic; calyx smooth flowers grown on long peduncles with nodding buds that expand into erect flowers; petals 4-8, white to purplish in varieties also pink, violet, bluish or red. Fruit is a large capsule, ovoid to globose, glabrous, 4-6 cm long; 3.5-4 cm in diameter with expanded disc at the top and over small holes. Minute seeds are dispersed through the small holes.

Chemical constituent - Morphine, thebaine, codeine, papaverine, narcotine, narceine, papaverine, codamine and Rhoeadine, meconic acid (Evans, 2009; Gautam, et al., 2010).

Medicinal and Toxic/ Poisonous Properties

Medicinal properties -

Poppy based medicines are considered the most effective way of relieving severe pain, analgesic, astringent, hypnotic, bactericidal, calmative, carminative, demulcent, emollient, expectorant, hemostat, hypotensive, hypnotic, narcotic, nervine, sedative, antispasmodic, sudorific, toxic, diaphoretic. It is stimulant that induces euphoria and helps get rid of anxieties tensions, fears and inhibitions. The seeds contain cough suppressant. The plant is used to treat intestinal, stomach spasms and respiratory spasms triggered by asthma attacks. Opium poppy is used to treat cancers of the skin, stomach, tongue, uterus, spleen, breast, ear, nose, and tumors of the abdomen, bladder, eyes, faces, liver, spleen and uvula. The tincture of the plant is said to help cancerous ulcers. The capsule decoction and an injection of the seed decoction are said to help uterine

cancer. In ayurvedic medicine the seeds are considered aphrodisiac, constipating and tonic, the fruit antitussive, binding, cooling, deliriant, excitant and intoxicant.

Toxic/ poisonous properties - Opium is also the source of the toxic and extremely habit-forming narcotic heroin or diamorphine, prohibited in some countries. It can cause stupor, coma, shallow and show breathing, respiratory and circulatory depression, excitement, constipation and excessive salivation. Although deaths are rare the poisoned animals take a long time to recover. Poppy seed cake was once believed to cause drowsiness but this was not confirmed in early animal trials. Opium is largely used for manufacture of morphine, codeine, narcotine, laudenine, papaverine and many other alkaloids. It is also the source of the toxic and extremely habit-forming narcotic hero in or diamorphine, prohibited in many countries.

Toxic part - Whole plant.

Poppy is an annual erect herb, 60-120 cm in height, rarely branching, with ovate-oblong leaves; it bears large showy flowers and nearly globose to spherical capsules, containing small white or black kidney-shaped seeds. It is a rabi plant, and remains for about 150-160 days in the crop field. It is mainly (90%) self-pollinated, since the dehiscence of anthers takes place before the opening of the flower. A large number of the forms of variety album DC. are cultivated in India; it has ovate globose capsules devoid of apertures.

The plant is grown on well-drained, fertile, clayey loam to rich sandy-loamy soil. It prefers moderately cool weather and open sunny locations; severely cold spells, frost dull cloudy atmosphere, highwinds, and heavy rainfall during the lancing period adversely affect the yield. Seedlings are thinned out to 20-25 cm apart when they grow 5-7 cm tall. The plants are about 20 cm tall. It takes 75-80 days (in Neemuch, Madhya Pradesh) and about 105 days (in Uttar Pradesh) to come into flower, depending upon the variety sown. The petals fall in 3-4 days and the growing capsule is ready for lancing in the next 6 to 10 days. The green unripe capsules contain the maximum amount of morphine which diminishes with its ripening and yellowing; conversely, codeine and nicotine increases with age. Lancing is done longitudinally in bright sunlight and the latex (crude opium) oozes from the wounds dries during the following night and is scrapped with a sharp kitchen-knife in the early hours of the succeeding morning. Lancing is performed in the afternoon with a special knife, capable of making four incisions at a time, each at about 1/12 cm apart. Each capsule is lanced for 4 to 6 times. A deep incision causes the collection of the latex inside the capsule and spoils the seeds. The crude opium is stored in earthen

-pots and dried in the sun to obtain the raw opium of a uniform consistency. The dry produce should be stored in closed vessels. The entire produce goes to the Excise & Narcotics Department which pays according to its consistency and purity. The average yield of raw opium varies from 13 to 33 kg per hectare, though much higher yields are recorded under good agronomic practices. The crop also yield 3 to 4 quintals of seeds per hectare. The seeds contain up to 50 per cent of a golden-yellow fatty oil which is devoid of narcotic properties.

There are 25 opium alkaloids identified in the raw opium. Of them, morphine, thebaine, codeine, narcotine and papaverine are important; morphine is by far the most important. The Indian produce of raw opium contains, on an average, about 20% of the total alkaloids by weight. It possesses 9 to 14% of morphine, 5-7% narcotine, 1.25 - 3.75% codeine, 0.4-1% papaverine and 0.2-0.5% theabine. The produce obtained in Turkey and the Balkan countries is collected from one incision only and is therefore rich (10-21%) in morphine; conversely, the Indian opium is richer in codeine and narcotine.

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