

***Datura stramonium* L.**
Solanaceae



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■ Morphological Description

The *Datura stramonium* plant is a large and coarse annual herb, branching freely, of up to one metre high, or even two in rich soil. The root is very long, thick and whitish, giving off many fibres. The stem is stout, erect, leafy and smooth, a pale yellowish green in colour. Leaves are large and angular, uneven at the base, with a wavy and coarsely-toothed margin, and branching veins very plainly developed. Flowers are large and 8-10cm long, white or violet, growing singly on short stems springing from the axis of the leaves or at the forking of branches. The corolla, folded and only half-opened, is funnel-shaped, of a pure white, with six prominent ribs. Flowers are succeeded by large, eggshaped seed capsules of a green colour, and covered with numerous sharp spines. When ripe, this seed-vessel opens at the top, throwing back four valve-like forms, leaving a long, central structure upon which numerous rough, dark-brown seeds can be found.

■ Geographical Distribution

The origin of the plant is unknown. Several European botanists refer it to North America or Asia, and it is possible that it is native to an Eastern country.

Local: The Nile Delta, including Cairo but not further south.

Regional and Global: Throughout the world, except the colder regions.

■ Ecology

Datura stramonium is generally found growing in

***Datura stramonium* L.,**

Sp. Pl. ed.1, 179. 1753.

Datura tatula L.

Names

Arabic: Datura داتورة , Nafir نفير ,

Taturah طاطورة

Berber: Tabourzigt, Tidilla.

English: Thornapple, Devil's apple, Jimson Weed

French: Datura, Stramoine, Pomme epineuse, Herbe aux sorcieres, Pomme Epineuse, Dature, Endormie, Herbe du diable, Pomme du diable

full sun on grazing land, roadsides or waste ground. It prefers disturbed sites with fertile soils, such as stock camps or riverbanks where it can become abundant. *Datura stramonium* is easily cultivated, growing well in an open, sunny environment. It will flourish in most moderately good soils, optimally in rich calcareous soil, or in sandy loam, with leaf mould added.

■ Status

Cultivation of the plant for medical purposes has been recommended. *Datura stramonium* seeds were cultivated in Egypt in two different locations: the experimental farm of the Faculty of Pharmacy, Cairo University, Giza, Egypt, which represents clay-loamy soil; and the 6th October Farm (Noubaria), which belongs to the National Serve Sector of Egyptian Armed Forces, Cairo-Alexandria Desert Road, where the texture was found to be sandy. The plant has been successfully cultivated and could be extended to wider areas according to market demands.

■ Part(s) Used

All parts possess medicinal value, though leaves and seeds are most widely used.

■ Collection

Leaves should be gathered when the flowers have fully blossomed and carefully dried in the shade. The seed should be gathered when ripe.

■ Preparations

Powdered leaves, fluid extract from leaves, fluid extract from seeds, tincture from leaves, powdered extract.

■ Use

Oral, ointment.

■ Constituents

Tropane alkaloids, about 0.2-0.45%; mainly hyoscyamine, hyoscyne and to a lesser extent, atropine. Seeds contain about 0.2% alkaloids with 15-30% fixed oil.

■ Pharmacological Actions and Toxicity

Anticholinergic, antiasthmatic and antispasmodic effects of the drug are mainly due to the presence of the alkaloids, hyoscyamine and scopolamine. Stramonium has been employed in all the conditions for which belladonna has been commonly used, but acts much more strongly on respiratory organs, and has acquired a special reputation as one of the chief remedies for spasmodic asthma, being more often used as the main ingredient in asthma powders and cigarettes than internally. The beneficial effect is attributed to the presence of atropine, which paralyses the endings of the pulmonary branches, thus relieving the bronchial spasm. Seeds are recorded to relieve asthma in the same manner as leaves, and are employed as a narcotic and anodyne. Atropine is used to treat nerve gas poisoning, Parkinson's disease, peptic ulcers, diarrhoea and bronchial asthma. Scopolamine is used as preanaesthetic medication for treating motion sickness. Applied locally, in ointment, plasters or fermentation, Stramonium is documented to palliate the pain caused by muscular rheumatism, neuralgia, haemorrhoids, fistula, abscesses and similar inflammations. Careful consideration of the toxicity of the plant is required before its use. Its ingestion can induce characteristic symptoms with over dosage, whether inadvertent or intentional. The mouth becomes dry, an intense thirst develops, vision blurs with prominent mydriasis and the heart rate increases. This is followed by hallucinations, delirium, loss of motor coordination, which may lead to coma and ultimately death by respiratory failure.

■ Pharmacopoeia

British Herbal Pharmacopoeia, 1976.

Egyptian Pharmacopoeia, 1984.

European Pharmacopoeia, 1997.

■ Pharmaceutical Products

Nospa (EPICO)

Buscopan,, Buscopan Compositum; Buscopan plus (CID), (Boehringer Ingelheim)

Butacid (CID)

Farcorelaxin (Pharco)

Spasmoein (Memphis)

■ Traditional Medicine and Indigenous Knowledge

History: Stramonium is a well known poisonous weed. Its native country is unknown. The Arabs of Central Africa are known to dry the leaves, flowers, and rind of the rootlet, which is considered the strongest preparation, and to smoke them in a common bowl or water pipe.

■ Traditional Medicinal Uses

- Chest disease
- Gastrointestinal diseases (peptic ulcer).
- Pertussis disease
- Rheumatic disease
- Sialorrhoea in parkinsonism.

■ Other uses of the plant

The leaves are being used in cigarettes or smoked in a pipe, either alone, or with a mixture of tobacco, or with cubebs, sage, belladonna and other drugs. More commonly, however, the coarsely-ground leaves are mixed into cones with some aromatic and with equal parts of potassium nitrate, in order to increase combustion and are burned in a saucer, the smoke being inhaled into the lungs. Great relief is afforded, the effect being more immediate when the powdered leaves are burnt and the smoke inhaled than when smoked by the patient in the form of cigars or cigarettes. Like most drugs, if used regularly, relief is not so apparent and the treatment is only palliative, the cause of the attack not being affected. Accidents have also occasionally happened from the injudicious use of the plant in this manner. Stramonium was used as a sedative in epilepsy. The seeds can be smoked with tobacco to relieve asthma.

In Egypt, dried leaves and flowers have been smoked as tobacco to alleviate difficult breathing, influenza; leaves have been used as poultices (with some oil) for rheumatic pain.

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