

***Hyoscyamus muticus* L.**
Solanaceae



Compiled by: Prof. F. M. Hammouda, Prof. S. I. Ismail,
Dr. N. S. Abdel-Azim and Dr. K. A. Shams
Edited by: Prof. K. H. Batanouny
Photos by Prof. K. H. Batanouny

■ Morphological Description

Herbaceous plant, 30-60 cm high, perennial, stout, green and fleshy, stem thick, richly branched from the neck, leaves succulent, alternate, long petioled below, sessile above with an acute apex and angled or toothed-lobed margin. The leaf blade is broad, the floral leaf arising on the peduncle oblong lenicular-shaped. Inflorescence in one-sided spike or raceme-like with dense flowers. Flowers are bisexual, homogeneous and slightly zygomorphic, calyx is tubular, corolla funnell-shaped, white or green or purple. Fruits are relatively small, brownish, unarmed capsules with a longitudinal opening and containing numerous seeds. It is included in the persistent calyx.

■ Geographical Distribution

Local: Almost all the phytogeographical regions of the country. It occurs in the desert, Mediterranean Sea, Sinai, Red Sea, Oases, and in certain parts of the Gebel Elba region.

Regional: In the deserts of the Middle East.

Global: In the deserts of the Middle East, Africa, Europe, Asia and South America.

■ Ecology

The soil texture supporting *Hyoscyamus muticus* ranges between gravelly sand, sandy limestone and loam and to sandy clay. Thus, *Hyoscyamus muticus* has a wide range of amplitude in the desert, the most suitable habitat being sandy soil (considerable fine sand fruction) with a low medium carbonate

Hyoscyamus muticus L.,

Mant., 45 (1767).

Names

Arabic: Sakaraan, Sekran سكران,
Sem el-far سم الفار,
Shagaretes-sakraan

English: Egyptian Henbane

French: Jusquiame d'Egypt

content. The soil reaction must be weakly alkaline (PH 7.4-8.0) or alkaline (PH 8.0-9.0) and low salinity of the magnitude of 0.28%.

Hyoscyamus muticus belongs to the xerophytic plant community, which is characterized by a limited water supply.

■ Status

The economic importance of *H. muticus* is widely increasing since the plant has been spotlighted and an increasing interest is directed towards its cultivation as a source for alkaloid production in pharmaceutical industrialization. Trials to cultivate *H. muticus* in two different locations have been carried out to determine the total alkaloidal contents in addition to other plant growth criteria. The first location was the experimental farm of the Faculty of Pharmacy which represented a clay-loamy soil, and the second one was the 6th October farm in Noubaria (Egypt) which represented sandy soil lands, the latter giving better results.

■ Part(s) Used

Total herb, leaves and flowering tops.

■ Collection

The flowering tops are collected at the mid flowering stage.

■ Preparations

Infusion, decoction and powder.

■ Use

Oral, external and ointment.

■ Constituents

Total tropane alkaloids ranging from 1.38-1.58% during flowering stage. Hyoscyamine represents 90% of the total alkaloids in addition to small amounts of hyoscyne. *H. muticus* is 25 times richer in alkaloid than *H. niger*.

■ Pharmacological Action and Toxicity

Antispasmodic, anodyne, sedative, mydriatic. Principally employed in irritable conditions and nervous affections. It has also been recorded to be used in asthma, whooping cough, as a sedative and as a substitute for opium, where this is inadmissible, such as for children's complaints. The alkaloid hyoscyne is used very widely, as a pre-operative medication, to prevent travel sickness. Hyoscyamus is used mainly for its antispasmodic effect on the digestive and urinary tracts, and to counteract griping due to purgatives.

The plant is toxic due to its high content of tropane alkaloids.

■ Pharmacopoeia

1. Egyptian Pharmacopoeias 1984.
2. British Pharmacopoeias 1809, 1968, 1973.

■ Phytopharmaceutical Products

Hyoscyamus muticus fluid extracts.

Herba Hyoscyamus muticus.

Standardized powder of *Hyoscyamus muticus*.

Tincture of Egyptian *Hyoscyamus*.

Avicenne powder; Kahira, 20g *Hyoscyamus* leaves, 75g.

Buchu and *Hyoscyamus* mixture.

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

■ Traditional Medicine and Indigenous Knowledge

History: "*Hyoscyamus*" originated from Greek literature, "*Hoys*" meaning a Hog and "*Kyamos*" meaning a bean. It was Dioscorides who, long before the Christian era, gave the plant its name of *Hyoscyamus*, because although poisonous to man and many animals, pigs could apparently eat it

without any harm. He used henbane to produce sleep and allay pain. In the 10th century, it is recorded under the name of *Jusquiasmus*. It fell into disuse until it was again adopted in medicine in 1809 after the recommendation of Baron Storch, who gave it in the extract form in cases of epilepsy and other nervous convulsive diseases.

Greeks and Romans knew it as a painkiller; Babylonians and Egyptians were acquainted with both its good and bad qualities. Brewers in earlier times made use of henbane in beer, probably in order to make it more intoxicating.

The plant is said to relieve painful spasmodic conditions, of the digestive and urinary tracts, and lead colic. It has been used for toothache and whooping cough. The boiled herb has been used as a pain killer during labour. Sakaraan cigarettes have been used to treat asthma.

■ Traditional Medicinal Uses

- Acute mania and delirium, in the treatment of withdrawal symptoms in morphine dependence
- Chronic dementia
- Convulsions
- Epileptic mania
- Functional palpitations
- Gastro-intestinal tract and the gastric or duodenal ulcer
- Mental and maniacal excitement
- Neurologia
- Paralysis agitans
- Spasmodic cough and asthma

Other uses of the plant: In some parts of the world, it is used as a poison.



■ References

- El-Gamasy, A. M.; Saleh, M. M. and Rafaeel, I. S. (1978). "Effect of growth regulators on *Hyoscyamus muticus* L. III- The effect of a number of applications and different concentrations of some growth regulators on the growth, flowering and alkaloidal content", Bull. NRC, Egypt. 3(2): 177.
- Husain, A., (1983). "Present and Future of Medicinal Plants in India" - A scientific appraisal, 33-46. Report on the Seminar on Medicinal Plants, Phytochemical and Bull drugs, 23rd to 25th March, New Delhi.
- Khalifa, S. F., (1972). "Morphological and Phytoch. Studies on Some Members of Family Solanaceae in Egypt", Ph. D. Thesis, Ain Shams Univ., Faculty of Science, Dept. of Botany, Cairo.
- Khafagy, S. M.; Mnajed, H. K. and Hadad, D. Y. (1964). "Phytochemical study of *Hyoscyamus muticus* L. grown in Egypt.", Egypt. Pharm. Bull. XLVI(10): 305.
- Kumar Anup; Sharma Ashok; Singh Anil K. and Virmani, O. P., (1984). Curr. Res. Med. Aromat. Plants, 6 (4), 197-211.
- Shams, K. A. (1994). "Phytochemical Studies On Certain Hyoscyamus Species.", M. Sc. Thesis, Ain Shams Univ., Faculty of Science, Dept. of Botany, Cairo.

General References

- Batanouny, K. H., (1999). "Wild Medicinal Plants in Egypt". (With contribution of: E. Aboutabl, M. Shabana & F. Soliman). With support of the Swiss Development Co-operation (SDC). Academy of Scientific Research and Technology, Egypt. The World Conservation Union (IUCN), Switzerland. pp. 60-64.
- Boulos, L. (2000). "Flora of Egypt", volume three, pp. 50, printed by Al Hadara Publishing, Cairo, Egypt.
- Chopra, R. N.; Chopra, I. C. And Handa, K. L., (1959). "Indigenous Drugs of India", 2nd ed., U. N. Dhar & Sons Ltd., Calcuta
- Dan Kenner, Yves Requena (2001) "Botanical Medicine, A European Professional Perspective", Paradigm Publications 44, Linden Street, Brookline, Massachusetts 02445 USA.
- Greive, M. (Mrs.), (1974). "A Modern Herbal Cape", Thirty Bedford Square, London, pp. 397-404.
- Hill, A. F., (1951). "Economic Botany" pp. 256, McGraw-Hill Book Co., London.
- Wren, R.C.; Elizabeth, M. Williamson and Fred J. Evans, (1988). "Potter's New Cyclopedia of Botanical Drugs and Preparations".