A Review on Pharmacological and Phytochemical profile of 
*Abelmoschus moschatus* Medik.

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Abstract

*Abelmoschus moschatus* Medik. is an aromatic and medicinal plant in the Malvaceae family, which is native to India. It is an erect hispid herbaceous trailing herb that grows up to 1.5m tall with a long slender tap root. Leaves are alternate, rough, hairy and heart-shaped. They have 3 to 5 lobes and can grow to 15cm long. Flowers resemble those of the hibiscus and are usually watermelon pink, although they are sometimes white or cream in colour. They last for only one day and their flowering depends on the timing of the wet season. Seeds are contained within hairy capsules up to 8 cm long, which are tough but papery. The seeds have a sweet, flowery, heavy fragrance similar to that of musk. The present paper deals with review on pharmacological and phytochemical profile of *Abelmoschus moschatus* Medik.

Key-words: *Abelmoschus moschatus*, Pharmacological, Phytochemical

Introduction

Medicinal plants are living and irreparable resources that is exhaustible if over used and sustainable if used with care and wisdom. The importance of medicinal plants has been mentioned since ancient time. However, at present medicinal plants are looked upon not only as a source of health care but also as a source of income (Dwivedi et al., 2007). These plants generated commercial demand for pharmacopoeial drugs and their products in India (Dwivedi S., 2014). Efforts have been made in recent years to introduce many of these drug plants to common people.

*Abelmoschus moschatus* Medik. is an aromatic and medicinal plant in the Malvaceae family, which is native to India. It is an erect hispid herbaceous trailing herb that grows up to 1.5m tall with a long slender tap root. The plant is used in the treatment of various diseases as described in traditional and folk remedies. Every part of this medicinal plant is used in one or the other way. Seeds are effective aphrodisiac and antispasmodic, and used in tonics. They check vomiting and are useful in treating intestinal disorders, urinary discharge, nervous disorders, hysteria, skin diseases etc. The mucilaginous seeds are emollients and demulcents.

Flower infusion is contraceptive. Different parts of the plant have uses in traditional and complementary medicine, not all of which have been scientifically proven. It is used externally to relieve spasms of the digestive tract, cramp, poor circulation and aching joints. It is also considered an insecticide and an aphrodisiac.

In India, roots, leaves (rarely), and seeds of ambrette are considered valuable traditional medicines. The bitter, sweet, acrid, aromatic seeds are used as a tonic and are considered cooling, aphrodisiac, ophthalmic, cardiotonic, digestive, stomachic, constipating, carminative, pectoral, diuretic, stimulant, antispasmodic, deodorant, and effective against kapha and vata, intestinal complaints, stomatitis; and diseases of the heart. According to Unani system of medicine seeds allay thirst, cure stomatitis, dyspepsia, urinary discharge, gonorrhea, leucoderma and itch. Roots and leaves are cures for gonorrhea (Orwa et al.; Jain, 1991).

The present paper deals with studies on pharmacological and phytochemical profile of the selected medicinal plant.

Review on Pharmacological and Phytochemical Profile of *Abelmoschus moschatus* Medik.

A comprehensive review of literature was done to study the work done in the selected species and it was found that, several authors reported on pharmacological and phytochemical profile of selected...
Plant Profile
Botanical Name: Abelmoschus moschatus Medik.
Family: Malvaceae
Synonyms: Hibiscus abelmoschus

Taxonomic classification
Kingdom: Plantae
- Phylum: Angiosperms
- Class: Rosids
- Order: Malvales
- Family: Malvaceae
- Genus: Abelmoschus
- Species: moschatus

Vernacular Names
- English: Muskmallow, Ambrette
- Sanskrit: Latakasturika, Gandapura
- Hindi: Mushkdana, kasturi bendi, Kasturidana
- Marathi: Kasthuribhendi
- Tamil: Varttilaikasturi
- Tulu: Kasturi benda
- Kannada: Kasturi bende
- Assamese: Gorukhiakorai
- Gujarati: Mushkdana
- Malayalam: Kasthurivenda
- French: Ambretta semi
- German: Musk Okra (Nadkarni, 1927).

Part used: Seed, flower, root, leaves

Distribution
It is native of India and is cultivated widely as an oil seed crop in India, Southern China, Vietnam, Nepal, Tropical Asia, South East Asia and some parts of the Pacific.

Description
Abelmoschus moschatus Medik. is an aromatic and medicinal plant in the Malvaceae family, which is native to India. It is an erect hispid herbaceous trailing herb that grows up to 1.5m tall with a long slender tap root. Leaves are alternate, rough, hairy and heart-shaped. They have 3 to 5 lobes and can grow to 15cm long. Flowers resemble those of the hibiscus and are usually watermelon pink, although they are sometimes white or cream in colour. They last for only one day and their flowering depends on the timing of the wet season. Seeds are contained within hairy capsules up to 8 cm long, which are tough but papery. The seeds have a sweet, flowery, heavy fragrance similar to that of musk. It can be grown in varied climate under tropical and subtropical conditions. It can be grown both as a rain fed crop and as an irrigated crop. It grows on well-drained loamy and sandy loam soils. Loamy soils with neutral pH and plenty of organic matter are ideal conditions for its growth.
for its cultivation (Purohit et al., 2004) It is propagated through seeds. The optimum time of sowing is June-July with pre-monsoon showers. Seeds are soaked in water before sowing for 24 hours. It takes 5-7 days for proper germination.

**Chemical constituents**
The seeds are valued for the volatile oil present in the seeds. Seed analysis report 6% mucilage, 11.1% moisture, 31.5% crude fiber, 14.5% lipids, 13.4% starch, 2.3% protein, 5% resins and 0.2 to 0.6% volatile oil. Analysis of volatile oil report myricetin-3-glucoside, glycoside cynadin, beta-sitosterol and beta-D-glucoside (Orwa et al., 2009). The other principle components identified are farnesyl acetate (70%), 7(Z)-hexadecan-16-olide, 9(Z)-octadecen-18-olide (14%), ambretolide, farnesol, dodecyl acetate and decyl acetate (Rout, 2001). A detailed investigation of the basic fraction of a CO2 extract of seeds revealed a total of 58 nitrogen containing volatile constituents. Among these are 27 pyrazine derivatives, 12 pyridines and 7 thiazoles including four natural compounds i.e., 1-(6-ethyl-3-hydroxy pyridin-2-yl) ethanone, 1-(3-hydroxy-5,6-methylpyridin-2-yl) ethanone, 1-(3-hydroxy-6-methylpyridin-2-yl) ethanone and 1-(3-hydroxy-5-methylpyridin-2-yl) ethanone (Du et al., 2008). The fatty oil of seeds contains the phospholipids: 2-cephalin, phosphatidylserine and its plasmalogen and phosphatidyl choline plasmalogen. Absolute contains farnesol and ambrettolic acid lactone. b-sitosterol and its b-d-glucosides are isolated from leaves. Petals contain b-sitosterol, flavonoid myricetin and its glucoside. Anthocyanins like cyanidin-3-sambubioside and cyanidin-3-glucoside are present in the flowers (Chopra et al., 2005). The oil from the seeds is rich in linoleic acid and contains a-cephalin, phosphatidylserine, its plasmalogen and phosphatidylcholine plasmalogen. The characteristic musk-like odor of the seed oil is mainly due to the presence of a ketone, ambrettelide, a lactone of ambrettolic acid (Rout, 2001; Wealth of India, 2001).

**Medicinal uses**
Every part of this medicinal plant is used in one or the other way. Seeds are effective aphrodisiac and antispasmodic, and used in tonics. They check vomiting and are useful in treating intestinal disorders, urinary discharge, nervous disorders, hysteria, skin diseases etc. The mucilaginous seeds are emollients and demulcents. Flower infusion is contraceptive. Different parts of the plant have uses in traditional and complementary medicine, not all of which have been scientifically proven. It is used externally to relieve spasms of the digestive tract, cramp, poor circulation and aching joints. It is also considered an insecticide and an aphrodisiac. In India, roots, leaves (rarely), and seeds of ambrette are considered valuable traditional medicines. The bitter, sweet, acid, aromatic seeds are used as a tonic and are considered cooling, aphrodisiac, ophthalmic, cardiotonic, digestive, stomachic, constipating, carminative, pectoral, diuretic, stimulant, antispasmodic, deodorant, and effective against kapha and vata, intestinal complaints, stomatitis; and diseases of the heart. According to Unani system of medicine seeds allay thirst, cure stomatitis, dyspepsia, urinary discharge, gonorrhea, leucoderma and itch. Roots and leaves are cures for gonorrhea (Orwa et al.; Jain, 1991).
Conclusion

Abelmoschus moschatus Medik. commonly known as Kasturibhendi (Hindi), Musk mallow (English) belongs to family Malvaceae and is medicinally important plant. Several pharmacological and phytochemical studies were reported by several authors.

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