

ETHNOBOTANY AND PHYTOCHEMICAL OF *ABUTILON INDICUM* (LINN.) SWEET: A REVIEW

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ABSTRACT

Abutilon indicum (Linn.) belongs to family Malvaceae. The whole plant or its specific parts (leaves, stem, roots, fruits and seeds) are known to have medicinal properties and have a long history of use by indigenous and tribal people in India. Traditionally, the plant is used for treatment of inflammation, piles, gonorrhoea and as an immune stimulant. In general, its root and bark are used as aphrodisiac, anti-diabetic and diuretic. Seeds are used in the treatment of cough, urinary disorders and as a laxative in piles. Besides, it is widely used in traditional medicine for treating fever, cough, lung disease, urine output, deafness, ringing in the ears, mumps and pulmonary tuberculosis. The plant contains mucilage, tannins, β -sitosterol, asparagines, flavonoids, alkaloids, hexoses, n-alkane mixtures (C_{22-34}),

alkanol, gallic acid and sesquiterpenes. Therefore, the present review paper is an attempt to compile an up-to-date and comprehensive review of *Abutilon indicum* (Linn.) that covers its Ethnobotany, phytochemical.

KEYWORDS: Ethnobotanical, *Abutilon indicum* (Linn.), phytochemical.

INTRODUCTION

According to WHO (World Health Organization) report, about 80% of the population, mostly in developing countries still depends on traditional medicinal system for their primary health care. India is one of the twelve mega-biodiversity centers with 4 hot-spots of biodiversity. Ethnobotanical knowledge has been reported from its several parts (Prkashnath *et al.*, 2006; Ganeshan *et al.*, 2007; Mohapatra and Sahoo, 2008 and Singh *et al.*, 2002). The different systems of medicinal usage like Ayurveda, homeopathy and Unani which are the local health

traditions, focuses on the use of plant products for the treatment of human and animal diseases. Medicinal plants contain numerous biologically active compounds which are helpful in the treatment of various diseases and improving the life. The presence of various life sustaining constituents in plants made scientists to investigate them for their uses in treating certain infectious diseases and management of chronic wounds. In addition to being a good source of anti-infective agents, they are also cost-effective and have fewer side effects (Samy *et al.*, 2008; Ignacimuthu *et al.*, 2008; Nayak, 2006 and Samsam and Moatar, 1991). *Abutilon indicum* (Linn.) belonging to family Malvaceae, commonly called as Country mallow (English), Kanghi (Hindi), Atibala (Sanskrit). *Abutilon indicum* (Linn.) is a perennial shrub, softly tomentose and upto 3 m in height. The leaves are evergreen, Base-cordate, stipulate, fili form, ovate, acuminate, toothed, rarely subtrilobate and 1.9-2.5 cm long. Petiole 1.5-1.70 cm long, cylindrical, yellowish incolour, stellate and hairy. The flowers are yellow in color, peduncle jointed above the middle. The petioles are 3.8-7.5 cm long; stipules 9mm long; pedicels often 2.5-5mm long, axillary solitary, jointed very near to top and the seeds are 3-5mm, kidney shaped, reniform, tubercled or minutely stellate-hairy, black or dark brown (Kirtikar and Basu, 1994; Prajapati *et al.*, 2003 and Nadkarni, 1995).

Abutilon indicum (Linn.) has been used as anthelmintic, antiemetic, anti-inflammatory, in urinary or uterine discharge, piles, antidote. It is used in treatment of fever, dry cough, bronchitis, gonorrhoea and leprosy.

Taxonomic position of *Abutilon indicum* (Linn.)

Table. 1: Taxonomic position of *Abutilon indicum* (Linn.).

Kingdom	Plantae
Division	Angiosperm
Class	Eudicots
Subclass	Rosids
Order	Malvales
Family	Malvaceae
Genus	<i>Abutilon</i>
Species	<i>Indicum</i>

Regional names

Hindi: - Kanghi, Kakahi

Bengali: Petari

Marathi: Mudra, Petari

Sanskrit: Atibala

Malyalam: Dabi, Uram

Gujarati: Khapat, Kansi, Dabli

Tamil: Tutti, Paniara, Hutt

Telugu: Tutturubenda

English name: Country mallow, Indian mallow

Habit and habitat

The species occurs in number of tropical and subtropical areas and subtropical zones. The plant is found in India, Sri Lanka, topical regions of America and Malaysia. It is found as a weed in sub-Himalayan tracta, hills upto 1200m and in hotter parts of India. An example occurrence is within parts of the 'Great barrier Reef' islands of the 'Coral sea'.

Ethnobotany

Almost all the parts of *Abutilon indicum* (Linn.) are of medicinal importance and used traditionally for the treatment of various ailments. The roots of the plant are considered as demulcent, diuretic, in chest infection and urethritis. The infusion of the root is prescribed in fevers as a cooling medicine and is considered useful in strangury, haematuria and in leprosy. The leaves are found to be good for ulcer and as a fomentation to painful parts of the body. The decoction of the leaves is used in toothache, tender gums and internally for inflammation of bladder. The bark is used as febrifuge, anthelmintic, alexeteric, astringent and diuretic. The seeds are used in piles, laxative, expectorant, in chronic cystitis, gleet and gonorrhoea (Kirtikar and Basu, 1994; Nadkarni, 1995; Chatterjee and Prakash, 1991).

Phytochemistry

The knowledge of individual chemical constituents of a medicinal plant is essential for understanding pharmacological activity as well as potential toxicity and optimizing extraction procedures. *Abutilon indicum* (Linn.) has been explored phytochemically by various researchers and found to possess number of chemical constituents.

Roots

From the roots, non – drying oil consisting of various fatty acids viz. linoleic, oleic, stearic, palmitic, lauric, myristic, caprylic, capric and unusual fatty acid having C17 carbon skeleton, sitosterol, and amyrin from unsaponifiable matter were yielded (Rajurkar *et al.*, 2009).

Aerial parts

The aerial part of the plant on extraction with petroleum ether led to the isolation of n-alkane mixture, an alkanol fraction and β – sitosterol; fumaric, p-coumaric, vanillic, caffeic, and p-hydroxybenzoic, p - β -Dglucosyloxybenzoic acids, and gluco-vanilloyl glucose, fructose, aspartic acid, histidine, threonine, serine, and leucine. Galactose and galacturonic acids are present in mucilage fraction. Saponins, flavnoids, and alkaloids are present in shoot and flowers (Gaind and Chopra, 1976).

Leaves

Leaves contain tannins, mucilage, traces of asparagin, organic acid and, ash of leaves contains alkaline sulphates, chlorides, magnesium phosphate and calcium carbonate (Panda, 2000). Ethanolic extract contain 72% more quercetin than flowers (Rajlakshami and Kalaiselvi, 2009). Leaves also contains alkaloids, sterols, titerpenoids, glycosides essential oils as well various amino acids. Baxi et al isolated tocopherols and β – sitosterol from leaves (Baxi and Parikh, 1980).

Flowers

Seven flavonoids compounds: luteolin, chrysoeriol, luteolin 7-O-beta-glucopyranoside, chrysoeriol 7-O-betaglucopyranoside, apigenin 7-O-beta-glucopyranoside, quercetin 3-O-beta-glucopyranoside, quercetin 3-O-alpha-rhamnopyranosyl (1 --> 6)-beta-glucopyranoside, were isolated and identified from the flowers of *Abutilon indicum* (L.) Sweet (Malvaceae).²³ Two sesquiterpene lactones i.e. alantolactone and isoalantolactone have been first time reported (Sharma and Ahmed, 1989).

Fruits: Fruits contain flavonoids and alkaloids (Sinha and Dogra, 1985).

Seed: A water soluble galactomannan has been isolated from the seeds of *Abutilon indicum* (Linn.) containing -galactose and -mannose in 2:3 molar ratio (Singh *et al.*, 1997). The seed oil of the plant affords cis 12, 13-epoxyoleic (vernolic) acid, 9, 10- methylene octadec-9-enoic (sterculic) acid, as well as 8, 9- methylene-heptadec-8-enoic (malvalic) acid (Babu *et al.*, 1980). TLC-GLC studies of seed oil revealed the presence of high amount of unsaturated acids. Stearic acid and palmitic acid were the principal component from the saturated acids. Raffinose as a prime sugar component was found in seed (Badami *et al.*, 1975). Amino acid profile of seed proteins (31%) contains threonine, glycine, serine, glutamine, lysine,

methionine, isoleucine, proline, alanine, cysteine, tyrosine, phenylalanine, leucine, asparagine, histidine, valine, arginine (Prakash *et al.*, 1988).

Whole plant: Some flavonoids have been isolated from *Abutilon indicum* (Linn.) like quercetin, kaempferol, gossypetin, and cyanidin glycosides (Phytochemical reports, 1972). The investigation on the chemical constituents of the whole plant has resulted in the isolation of two new compounds, abutilin A (1) and (R)-N-(1'-methoxycarbonyl-2'-phenylethyl)-4-hydroxybenzamide (2), as well as 28 known compounds (Kuo *et al.*, 2008). β -sitosterol as a potential new mosquito larvicidal compound was isolated from petroleum ether extract (Abdul *et al.*, 2008). The plant was found to contain gum resin and mucilage (Yoganarasisimhan *et al.*, 1985). Tannins were not present in 50% ethanolic extract of the plant (Atal *et al.*, 1978). The essential oil of plant contains β -pinene, caryophyllene, caryophyllene oxide, 1, 8-cineole, ceraneol, ceranyl acetate, elemene, eudesmol, and farnesol (Jain *et al.*, 1982). Preliminary phytochemical test shows the presence of glycosids, leucoanthocyanidin, saponins alkaloids cardiac glycosides, cyanogenetic tannins, and phenolic compounds in the leaves, root, and stem (Dhanlakshmi *et al.*, 1990).

CONCLUSION

The extensive survey literature reviewed that *Abutilon indicum* (Linn.), is an important medicinal plant with diverse pharmacological spectrum. Lot of pharmacological studies has been carried out with extract of the different parts of the plant. The plant is widely used in traditional medicinal system of India and has been reported to possess hepatoprotective, anti-inflammatory, lipid lowering, antifungal, wounds healing and antibacterial properties. The whole plant contains mucilaginous substances and asparagines. Saponins, flavonoids, alkaloids, hexoses, n-alkane mixtures (C22-34), alkanol. The present review summarizes some important phytochemical investigations and isolated principles from them, which can be investigated further to achieve lead molecules in the search of novel herbal drugs. Due to medicinal properties there is enormous scope for future research on *Abutilon indicum* (Linn.) and further clinical and pharmacological investigation should be conducted to investigate unexploited potential of this plant.

The present paper highlights evidence-based overview of phytochemical and ethnomedicinal properties of *Abutilon indicum* (Linn.), which may be helpful to establish a standard natural drugs for further research.

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