

## REVIEW ARTICLE ON INDIAN MALLOW PLANT

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**\*Corresponding Author****Dr. Divya P.**T. John College of Pharmacy,  
Bangalore, Karnataka, India.**ABSTRACT**

*Abutilon indicum* is also called as Indian mallow belonging to the family malvaceae. The whole plant of *Abutilon indicum* is used in traditional medicine such as laxative, emollient, analgesic, anti-diabetic, anti-inflammatory. It is also used in the treatment of leprosy, urinary diseases, jaundice, piles, relieving thirst and cleaning wounds. The flowers are extracted with a different solvent such as ethanol, methanol, ethyl acetate, petroleum ether, ethanol: water, methanol: water. A review on the various parts of the plant is to provide the pharmacological activities and traditional uses of the plant.

**KEYWORDS:** *Abutilon indicum*, Anti- inflammatory, Anti-arthritis, Anti-ulcer.

**INTRODUCTION**

*Abutilon indicum* is commonly known as Thuthi, Kanghi. Also known as Mallow in English and "Atibala" in Sanskrit. Generally, Ati means "very" and Bala means "powerful". These plants are widely distributed in India, Srilanka, Tropical and Sub tropical regions of America and Malaysia.<sup>[1]</sup> The plant is very much used in siddha medicine. The part of the plant like bark, root, leaves, flowers and seeds are all used for medicinal purpose by Tamils.<sup>[2]</sup> The flowers of *Abutilon indicum* is traditionally used to increases semen in men. The phytochemical of this plant consists of alkaloid, saponins, amino acids, flavonoids, glycosides and steroids.<sup>[3]</sup> It has reported that the whole plant of *Abutilon indicum* has a wide range of therapeutic uses like laxative, emollient, analgesic, anti-inflammatory and blood tonic agent.<sup>[4]</sup> The leaves of the plant consist of steroids, sapogenins, carbohydrates and flavonoids.<sup>[5]</sup> The acids are isolated from the methanol extracts of leaves of the plant consist of Eudesmic acid, ferulic acid and caffeic acid.<sup>[6]</sup> Identification of these acid are obtained by 1H NMR, 13C-NMR the chemical constituents obtain from the leaves are flavonoids, terpenes, amino acids, aldehyde, hydrocarbon, ketone, fatty acids, and esters has been proved from the ethanol extract by gas chromatography coupled with mass spectroscopy.<sup>[7]</sup>

**Vernacular Names**

1. Scientific names: *Abutilon indicum* (L.) sweet
2. Sanskrit: Atibala, Balika, Balya, Bhuribala, Ghanta, Shitapushpa, Vikantaka
3. Siddha: Thuthi
4. Unani: Kanghi, Kangahi, Kakahiya, Kakahi,
5. Hindi: Kanghi
6. Assamese: Jayavandha, Jayapateri
7. Bengali: Badela
8. Kannada: Shrimudrigida, Mudragida, Turube
9. Kashmiri: Kath

**Morphology of plant: Plant description**

It is a perennial, branched with medium sized shrub and the height of the plant is up to 2 meters. plant is covered with minute hairs.<sup>[8]</sup> Leaves are alternate, cordate and acute in shape. Flowers are yellowish in colour with 5 petals. fruits have 15 to 20 chambers arranged spirally. seed colour is in blackish brown.<sup>[9]</sup>

**Leaves**

The leaves of the plant of *Abutilon indicum* is simple, alternate stipulated with 1.8-5.2cm long broadly ovate very cordate at base acute irregularly and coarsely dentate petioles are very long (2.4-7.4) cm.<sup>[10]</sup>

**Flowers**

- It is bright yellow, opening in the evening bracteate, pedicellate, complete, actinomorphic, herma heroes, pentamerous, hypogynous and cyclic.
- In this flower epicalyx is absent.<sup>[11]</sup>
- Calyx of 5 sepals, gamosepalous, free at the tips, valvate, persistent, green.
- Corolla yellow about 3cm in diameter made up to 5 petals. Polypetalous, slightly connate at the base and adnate to staminal tube, twisted.<sup>[12]</sup>
- Androecium consist of indefinite stamens Monadelphous forming a tube around the style the tube being united with the petals. Epipetalous in the upper part of the staminal tube are borne. Monothealous and extrose anthers.<sup>[13]</sup>
- Gynoecium are multicarpellary, syncarpous, carpel with a distinct acute point hairy shining ovary superior multilocular with one ovule in each locule

- Placentation axile, style long and stigma as many as carpels.<sup>[14]</sup>

### Stem

It is erect, aerial, herbaceous or woody. It is solid, cylindrical and branched in shape. Herbaceous portion of the stem is covered with stellate and scaly hairs and the woody part is fibrous. It has some mucilaginous substance.<sup>[15]</sup>

### Tap roots

Tap roots of *Abutilon indicum* is fairly long with a number of lateral branches, 1.5-2 cm in diameter, it is light brown, outer surface of the root is smooth with a dotted lenticles, bark thin and it can be easily peeled off, and the taste of root is bitter, odour is astringent.<sup>[16]</sup>

### Seeds

Seeds of mallow plant is 3-5mm in thickness and it looks like kidney shapes, it contains 15- 20 ridges on the outside of the seed. It is in dark brown colour with stellate hairy.<sup>[17]</sup>

### Varieties of *Abutilon* plant

They are nearly 150 varieties of *Abutilon* species is available in India from this only a few of these is used in medicinal purpose. They are namely,

- *Abutilon indicum*
- *Abutilon theophrashti*
- *Abutilon muticum*
- *Abutilon pannosum*
- *Abutilon megapotamicum*
- *Abutilon eremitopetalum*
- *Abutilon hybridum*

### *Abutilon theophrashti*

It is also called as velvet leaf, velvet plant, velvet weed, Chinese jute, etc. It is an annual plant belonging to the family Malvaceae and it originates from the southern Asia.<sup>[18]</sup> The velvet leaf will grow up to 3-8 feet tall on branched stout stems and these stems are covered with downy hairs. These plants grow in the warmer season.<sup>[19]</sup> It germinates in the spring and the flowers bloom in the summer. These plants typically take place between the months of July to September in certain areas.<sup>[20]</sup> The leaves of the plant will be large and heart-shaped with point tips at their ends and the flowers of *theophrashti* will be in yellow colour and they grow

up to an inch in diameter with 5 petals attached at the base.<sup>[21]</sup> The flowers grow on stalk and can either be found in cluster or singled along where the stalk meets the leaf stem. Pod like capsules of the plant consists of 12-15 wood segments that form a cup like rings from the maturation of the seeds, the wood segments remain joined and when the seed are ready to be released and the outside of the capsule contains vertical slits which releases seeds.<sup>[22]</sup>

### ***Abutilon megapotamicum***

It is also called as trailing Abutilon, flowering maple, Brazilian bell flower. Is semi evergreen shrub bearing pendant and looks like a bell-shaped flower up to 2inch and adorned with a red calyx protecting its yellow petals.<sup>[23]</sup> The flowers will bloom in summer to frost, they decorate the plant with blooms of flowers resembling like Chinese lanterns. These plants will grow up to height 5-8ft tall and wide up to 150-240cm. It will grow well in moist, rich, and well drained soils and it also protect from beds, insects.<sup>[24]</sup>

### ***Abutilon pannosum***

It is also called as ragged mallow, *sida pannosa* etc. It is a erect perennial herb or shrub and it grows up to 1.5-3m tall. The parts of the plant is velvet hairy in this species pannosum means ragged, tattered.<sup>[25]</sup> The leaves of the plant is 4-13cm long and broadly ovate, irregularly toothed, blunt or sharp tipped, heart-shaped at base and velvety at the both sides. Leaf stalk is 2-15cm long and the flowers of this plant is in yellow colour occurs solitary in leaf axils and appear in racemes or panicles at the end of branches.<sup>[26]</sup> Sepal cup is about 1cm long and fruit up to 1.2cm, sepals are 4-8mm long, ovate, lance like (narrow and tapering to a pointed apex) to broadly ovate or triangular, sharp tipped and inverted egg-shaped petals are (1.5-2\*1.3-1.7) cm, slightly notched (incision on an edge or surface). Stamen tube 5mm long and fruit is spherical, 1-1.5cm across with visible ridges.<sup>[27]</sup>

### ***Abutilon ranadei***

It is also called as (son ghanta) is one of the endangered plant species of the western Ghats. It is endemic and restricted to 4 districts of Maharashtra state.<sup>[28]</sup> The species of *ranadei* was named by the (N B RANADE) who was the keeper of the herbarium at the college of science, pune and he was died in the year of 1897.<sup>[29]</sup> It is Large shrub or small tree grows up to 3.0m tall young portion of the stem densely covered with short soft hair, downy. Leaves are- (4-20)\*(3-15) cm long and flowers are solitary, axillary. Flowering and fruiting season will be in the month of November to February.<sup>[30]</sup>

***Abutilon hybridum***

*Abutilon hybridum* is a category that encompasses a variety of different elements for many *Abutilon* cultivars, the best known for flowering maples “Nabob” produces maroon blooms that measures 3 inches across and has won the royal horticulture society’s award of garden. It is a part of the same plant of the hibiscus, the evergreen shrubs originated in tropical regions of south America. *Abutilon* blooms comes in 2 types: (1) broad open flowers or dangling (2) bell shaped blooms. several varieties of these species are widely grown in the western Ghats, leaves of this plants are edged and splashed with a creamy white colour. Flowers shades include white, yellow, orange, pink and red. White and yellow flowering shrubs bloom almost continually.

**Some pharmacological activity of *Abutilon indicum* plant****Antioxidant activity**

Antioxidant activity of the plant *Abutilon indicum* of seed extract was checked by ABTS, FRAP, DPPH and oleic acid peroxidation methods. These methods indicate the presence of both slow reacting and fast reacting components in the seed oils of *Abutilon indicum* herbs. The seed oils of *Abutilon indicum* has showed a broad spectrum activity as they were active against the gram -positive and gram – negative bacteria.<sup>[31]</sup>

**Antipyretic activity**

The effect of *Abutilon indicum* chloroform leaf extract at a dose of (200mg/kg and 400mg/kg) on yeast induced pyrexia was studied and it was found that chloroform extract at dose of 400mg/kg caused significant lowering of body temperature up to 5 hour after administration. Subcutaneous injection of baker’s yeast suspension markedly elevated the rectal temperature for 3 hours after administration. The result showed that chloroform extract at dose 400mg/kg of *Abutilon indicum* possess significant antipyretic effect in the yeast stimulate elevation of body temperature in rats than extract at dose 200mg/kg extract. The standard drug paracetamol at a dose f 150mg/kg significantly reduced the yeast stimulation elevation of body temperature. The result obtained for both the standard drug treated and abutilon extract treated rats were compared with the control (2% gum acacia) group and significant reduction in yeast elevated rectal temperature was observed in plant extract.<sup>[32]</sup>

**Anti-ulcer activity**

Antiulcer activity was performed using models such as aspirin pylorus ligation, ethanol induced and acrtic acid induced ulcer model. The effect of the extract on volume of gastric

content, PH, total and free acidity using the aspirin + pylorus ligation model were also evaluated. From this it was observed that the treatment with *Abutilon indicum* leaf extract significantly reduced the ulcer index ( $p < 0.001$ ) in alcoholic and aqueous extracts compared to that of control group in aspirin+pylorusligation, alcoholic and acetic acid induced ulcer model at a dose of (400mg/kg .p.o). famotidine at a dose of 20mg/kg was used as standard drug. The model of gastric acid secretion showed a reduction in volume of gastric content, increased in ph, free and total acidity.<sup>[33]</sup>

### Wound healing activity

The ethanolic extract of *Abutilon indicum* was studied for wound healing activity -using incision, excision and dead space wound models in albino rats. This extract at a dose of 400-mg/kg showed significant increase in wound contraction rate, skin breaking strength, granuloma strength and dry granuloma weight. The decrease in epithelisation period was observed as compared to control and standard. The pro-healing was dedicated to increase in collagenation deposition as well better alignment and maturation.<sup>[34]</sup>

### Anti-arthritis activity

The various extracts of *Abutilon indicum* were investigated for Anti-arthritis activity in (*in-vitro*) studies in male albino rats. The evaluation of Anti-arthritis activity was carried out using freund's adjuvant induced arthritis model. Methotrexate was used as a standard drug dose of (0.75mg/kg). The methanol extract of *Abutilon indicum* exhibited significant Anti-arthritis activity. Treatment with *Abutilon indicum* 400mg/kg showed significant reduction ( $p < 0.01$ ) in paw volume on both 7<sup>th</sup> and 14<sup>th</sup> day. Reference standard methotrexate also showed similar result in this concern. *Abutilon indicum* 100 and 200mg/kg were found to be insignificant in reducing paw volume.<sup>[35]</sup>

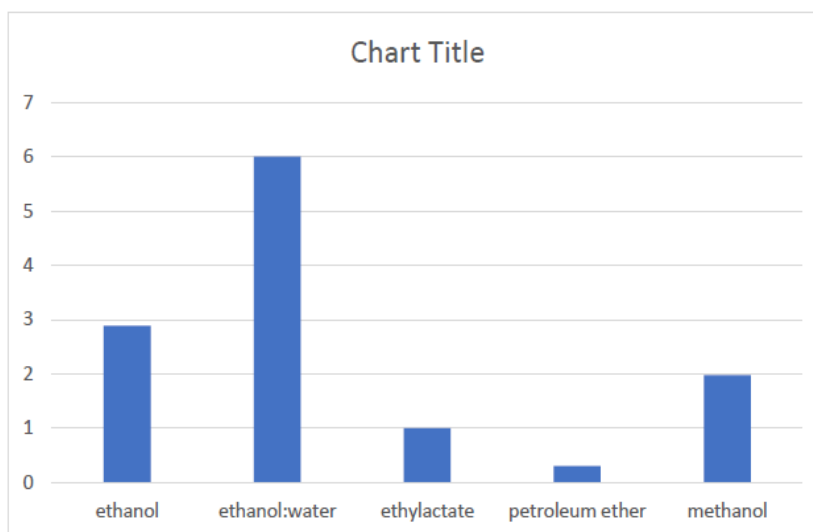
### Uses of abutilon indicum plant

- Aphrodisiac
- Piles, cough
- Bleeding piles
- Dental problems
- Indigestion
- Rheumatism
- Toothache and tender gums

- Ulcers
- Urinary problems, dysuria and haematuria
- Vaginal infections, wounds

### Important formulations of Indian mallow

- Bala taila
- Narayan taila
- Mahanarayan taila



### CONCLUSION

From this study it is concluded that the whole plant of *Abutilon indicum* (Indian mallow) can be used as ayurvedic and siddha medicine. It is an important medicinal plant with diverse pharmacological uses. Lot of pharmacological activities have been carried out with extract of different parts of the plant like leaves, bark, seed, stem, flower, root etc. in these plant there are 150 varieties of *Abutilon indicum* in which only 5-6 are mainly used in diagnostic purpose. The present review is to summarize some important varieties of *Abutilon indicum* and some pharmacological studies on hepatoprotective, wound healing, antipyretic etc. out of all the parts of the plant flowers are used as good antioxidant property and anti-microbial property which can be useful to the society to venture or undertaking into a field of alternative systems of medicine.

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