



A Review on Taxonomy and Ethnomedicinal uses of *Abutilon indicum* (L.)

Shubha Chaurasia¹, V.S. Shakya²

¹Department of Botany, Govt. P.G. College, Tikamgarh 472001 (M.P.) India
Email : ¹shubhachaurasia415@gmail.com, ²vijayshakya73k@gmail.com

Abstract: Medicinal plants are a boon to human beings to lead a disease free healthy life. They play a major role in maintaining human health. One such medicinal plant is *Abutilon indicum* (L.). The plant *Abutilon indicum* (L.) commonly known as Tutti, Atibala and Mallow belongs to the family malvaceae. It is native to tropical and subtropical regions of India and Ceylon and found abundantly in wastelands. The plant is an erect, branched, evergreen, perennial shrub upto 3.0 meters in height and easily identified by its cog-like fruits. The root of this plant is tap root with lateral branches, 1.5-2.0 cm in diameter and light brown in colour. The stems are cylindrical, branched, mucilaginous and 0.3-0.9 cm in diameter. The leaves are simple, alternate, orbicular-cordate, acuminate, toothed, hairy, 1.8-5.2 cm long, stipulate, stipule 9.0 mm long, petiolate and petiole 1.5-7.5 cm long. Inflorescence is solitary axillary. The flowers are hermaphrodite, pedicellate, pedicel 5.0-7.0 cm long, bright yellow in colour and opening in the evening. Epicalyx is absent. Calyx consist of 5 sepals, green, persistent, gamosepalous and 1.2 cm long. Corolla consist of 5 petal, polypetalous, 2.5 cm in diameter and bright yellow in colour. Androecium consist of indefinite stamens, monadelphous and filaments form a staminal tube around the style. Gynoecium consist of multicarpels, syncarpous and superior ovary. Fruits are multiringed capsule with pointed top, hairy, 1.5 cm in diameter and straw in colour. Seeds are reniform, 3-5 mm in size, hairy and drak brown or black in colour.

The whole plant of *Abutilon indicum* (L.) is used in traditional medicine such as laxative, emollient, analgesic, anti-diabetic, anti-inflammatory and blood tonic agent. It is also used in the treatment of leprosy, urinary disease, Jaundice, piles, relieving thirst, cleaning wounds and ulcers, vaginal infections, diarrhea, rheumatism, mumps, pulmonary tuberculosis, bronchitis, blood dysentery, gonorrhoea, haemorrhagic, septemia, piles, syphilis of penis, fever, uterus displacement and inflammation of bladder etc. The present paper highlights evidence based overview on taxonomy and ethnomedicinal uses of *Abutilon indicum* (L.) which may be helpful to the collection and identification of plant and to establish a standard natural drugs for further research.

Key Words: *Abutilon indicum*, Atibala, Indian mallow, Taxonomy, Ethnomedicinal uses.

1. INTRODUCTION :

Medicinal plants are one of the important source of medicine since human civilization existed. These plants are still remain as one of the major sources of drugs in modern as well as traditional system of medicine throughout the world. The use of medicinal plants played important role in Ayurveda, Siddha, Unani, Homeopathy and also in modern medicine. According to a report by World Health Organization (WHO), about 80% of the population, mostly in developing countries continues to depend on the traditional medical system for their primary health care¹. India is one of the twelve main centers of biodiversity with four biodiversity hot spots and could be termed as botanical garden of the world with a wealth of 8000 species of medicinal plants. The developing countries are the leading suppliers of medicinal plants to the world and India is one among them. India is a major exporter of medicinal plants to USA, Europe and Western countries and it shares about 10,000 tonnes². The value of trade in medicinal plants is about Rs. 5,000 crores while the world trade is about US \$ 62 billions. In survey, it is stated that till 2050 India reaches to trade of US \$

5 trillion in herbal medicines³. Currently, the ayurvedic and herbal products turnover is estimated to be Rs. 25,000 crores⁴.

medicinal plants contain some organic compounds which provide definite physiological action on the human body as well as their physiological activities due to the presence of bioactive substance include alkaloids, tannins, flavonoids and phenolic compounds⁵. Medicinal plants also contain large amount of antioxidants, such as polyphenols, vitamin C, vitamin E, selenium, B-carotene, lycopene, lutein and other carotenoids, which play important role in adsorbing and neutralizing free radicals, quenching singlet and triplet oxygen, or decomposing peroxides⁶.

Among various medicinal plants, *Abutilon indicum* (L.) is a very popular medicinal plant belonging to family. Malvaceae and is also known as Atibala in Sanskrit and Hindi. Literally 'Anti' means 'very' and 'Bala' means 'powerful'. referring to the properties of this as very powerful^{7,8}. It is generally grows in tropical and subtropical region and is found as a weed in the outer Himalayan tracts from Jammu to Bhutan upto an altitude of 1500 m and extending throughout the whole of northern and central India⁹. In India, it is very common on road sides, lake sides and waste places generally to grow after the rainy season¹⁰. It can grow in dry and poor soil and require hot conditions. Some time it is grown as an ornamental in gardens. The plant of *Abutilon indicum* (L.) is a perennial shrub, softly tomentose, branched, evergreen and upto 3.0 meters in height (Fig.1).



(A) Mature Plant



(B) Flowering and Fruiting Stage

Fig. 1 *Abutilon indicum* (L.).

It is used as food, timber and medicine¹¹. It is also used its fibers in various countries^{12,13,14}. Almost all the parts of this plant are used traditionally for the treatment of various health ailments. In traditional medicine, *Abutilon indicum* (L.) is used as a aphrodisiac, demulcent, diuretic, laxative, pulmonary and sedative¹⁵. It is also used for the treatment of several disease such as jaundice, gout, asthma, tuberculosis, toothache, swelling of the bladder, coughs, ulcers, diarrhea, and chest infection. *Abutilon indicum* (L.) has several biologically active phytochemicals such as alkaloids, flavonoids, steroids, tannins, terpenoids and saponins¹⁶ which demonstrate hepatoprotective¹⁷, anti-oxidant¹⁸, anti-inflammatory¹⁹, anti-microbial²⁰, hypoglycemia²¹, anti-diarrheal²², anti-proliferative²³, anti-arrhythmic²⁴, anti-larvicidal²⁵, anti-cancer²⁶, anti-asthmatic²⁷, anti-diabetic²⁸, anti-convulsant²⁹ and analgesic activities³⁰, Hence the present study is an attempt on the taxonomy and ethnomedicinal uses of *Abutilon indicum* (L.).

2. AIM AND OBJECTIVE :

The primary aim and objective of this paper is to compile and summarize the information of *Abutilon indicum* (L.) with respect to its taxonomy and ethnomedicinal uses.



3. MATERIALS AND METHODS :

This study is based on a review of literature published in scientific Journals, books, reports from national, regional and international organizations, thesis, conference, research papers and other grey materials.

4. RESULTS AND DISCUSSION :

Attempts are therefore made to present a brief summary of work carried out in India and abroad relating to the taxonomy and ethnomedicinal uses of *Abutilon indicum* (L.) under reviewed under given headings.

4.1 Taxonomic profile :

4.1.1 Botanical name :

Abutilon indicum (L.)

4.1.2 Synonym (S) :

Sida indica (L.)

4.1.3 Family :

Malvaceae

4.1.4 Plant Form :

Shrub

4.1.5 Vernacular names :

The plant *Abutilon indicum* (L.) is known by various names in different languages. Vernacular names of *Abutilon indicum* (L.) are presented in Table. 1^{31,32,33}.

Table 1. Vernacular names of *Abutilon indicum* (L.)

S.No.	Languages	Vernacular names
1	Arabic	Khatamihindium, Masthul gola
2	Assamese	Jayapatari, Jayavandha
3	Bengali	Patari, Jhapi, Badela, Mirubaha, Atribala
4	English	Indian mallow, country mallow, flowering maples, chinese bell flowers.
5	Farsi	Darakhtashaan
6	Gujarati	Kansaki, khapat, Dabli
7	Hindi	Kanghi, Kakahi, Atibala, Jhali, Tarakanchi, Debi, Itawari.
8	Irula	Sulukupoo.
9	Kannada	Tutti, Urki, Shrimudrigida, Hettutti, Mudragida, Hetakisa, Gidutingi, Hittukisu, Kisangi.
10	kashmiri	kath
11	Maharashtra	Karandi, Peeli booti
12	Malayalam	Dabi, Uram, Katuvan, Tutti, Velluram, Pitikkapattu, Katturam, Kuruntatti.
13	Marathi	Patari, Mudra, Chakrabhendi, Akakai, Kangain, Kansuli, Karandi, Madmi
14	Oriya	Nakachono, Pedipidika
15	Punjabi	Kangi, Kangibooti
16	Rajasthani	Tara-Kanchi, Kanghi, Debi, Jhili, Itwari
17	Sanskrit	Atibala, Kankatika
18	Sinhala	Beheth, Anoda
19	Tamil	Thuthi, Tuttikkairai, Kakkati, Peruntutti, Nallatutti, Paniyarattutti.
20	Telugu	Tutiri-chettu, Thuteribenda, Duvvenakaya
21	Tulu	Urki
22	Urdu	Kanghi



4.1.6 Taxonomic rank :

The taxonomic rank of *Abutilon indicum* (L.) is presented in Table 2.^{1, 32, 34, 35}

Table.2 Taxonomic rank of *Abutilon indicum* (L.)

Taxon	Rank
Kingdom	Plantae (Plants)
Subkingdom	Tracheobionta (Vascular plants)
Superdivision	Spermatophyta (Seed plants)
Division	Magnoliophyta (Flowering plants)
Class	Magnoliopsida (Dicotyledons)
Subclass	Dilleniidae
Order	Malvales
Family	Malvaceae (Mallow family)
Genus	<i>Abutilon</i> (Indian mallow)
Species	<i>Indicum</i>

4.1.7 Distribution and Habitat :

Abutilon indicum (L.) is widely distributed in the tropical and subtropical countries of America, Africa, Asia and Australia³⁶. It is found as a weed in the outer Himalayan tracts. from Jammu to Bhutan upto altitude of 1500 meters and extending throughout the whole of northern and central India⁹. It is very common on road sides, lake sides and waste places generally to grow after the rainy season¹⁰. It can grow in dry and poor soil and require hot conditions.

4.1.8 Taxonomic description

4.1.8.1 Habit :

Abutilon indicum (L.) is a perennial shrub, erect, hairy, softly tomentose and upto 3.0 meters in height³⁷.

4.1.8.2 Root :

The root is a tap root, cylindrical, 1.5-2.0 cm in diameter, fairly long with a number of lateral branches, outer surface smooth and light brown in colour^{19, 38}.

4.1.8.3 Stem :

The stem is herbaceous, erect, cylindrical, 0.3-0.9 cm in diameter³⁵, branched, soild, green, hairy and flexible in behaviour. It has some mucilaginous substance³⁹.

4.1.8.4 Leaf :

The leaf is cauline and ramal, alternate, simple, petiolate, stipulate, stipule 9.0 mm long³⁷ multicostate and reticulate venation. The petiole is 1.5-7.5 cm long, Cylindrical, hairy and yellowish brown in colour³⁵. The leaf lamina is evergreen, ovate to orbicular-cordate, acuminate, toothed, hairy, rarely subtrilobate and 1.8-5.2 cm long³⁸.

4.1.8.5 Inflorescence :

The inflorescence is solitary axillary.

4.1.8.6 Flower :

The flower is pedicellate, Pedicel 5.0-7.0 cm long, bracteate, complete, hermaphrodite, actinomorphic, pentamerous, hypogynous, cyclic, bright yellow in colour and opening in the evening³⁸.

4.1.8.7 Epicalyx :

The epicalyx is absent³⁸.



4.1.8.8 Calyx :

The calyx of 5 sepals, gamosepalous, free at the tips, acute apex. valvate, green, persistent and 1.2 cm long⁴⁰.

4.1.8.9 Corolla :

The corolla of 5 petals, polypetalous slightly connate at the base and adnate to staminal tube, twisted aestivation, bright yellow in colour and 2.5 cm in diameter⁴⁰.

4.1.8.10 Androecium :

Androecium consist of indefinite stamens, epipetalous, monadelphous, filaments form a staminal tube around the style, anther monothealous and extrose⁴¹.

4.1.8.11 Gynoecium :

The gynoecium is multicarpellary, syncarpous, superior ovary, multilocular with 2-3 ovules in each locule and axile placentation³⁸.

4.1.8.12 Fruit :

The fruit is multiridged capsule, 1.5 cm in diameter, consisting of nearly 20 mericarps having a flattened orange wedge shape, 1.3 to 1.5 cm long and 3-4 mm wide, straw in colour with pointed top. The faces are strongly pubescent with long stellate hairs. The mericarps containing 2-3 seeds split open at maturity during dissemination.

4.1.8.13 Seed :

The seed is reniform, 3-5 mm in size, dark brown or black in colour, covered with minutely stellate hairs^{7,42,43}.

4.1.8.14 Floral Formula :

$$\text{Br. } \oplus, \varnothing, \text{ Epik (absent) } \overline{K_{(5)} C_5, A_{(\infty)} G_{(\infty)}}$$

4.1.8.15 Propagation :

Abutilon indicum (L.) propagates by seeds.

4.1.8.16 Flowering and fruiting time :

Throughout the year, especially during the dry season.

4.1.8.17 Conservation status :

Not recorded.

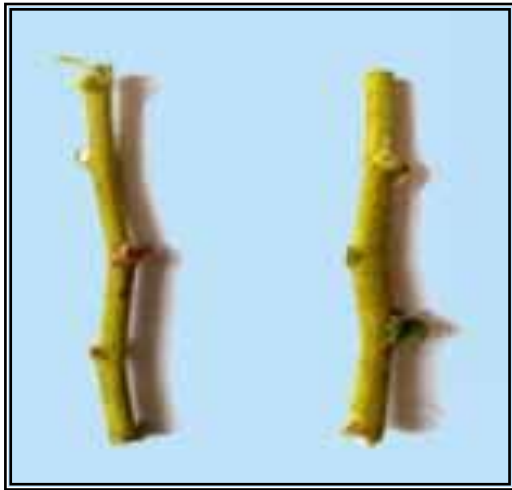
Typical photographs of various taxonomic features of *Abutilon indicum* (L.) are presented in **Fig. 2**.



(A) Twing of the Plant



(B) Roots



(C) Stems



(D) Leaves



(E) Flower



(F) Flower showing calyx



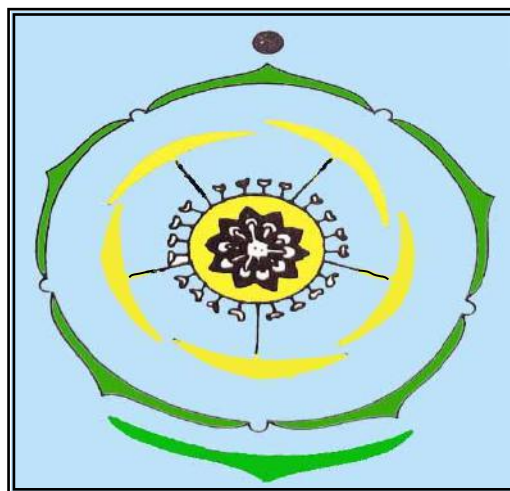
(G) Flower Showing Staminal tube



(H) Fruit



(I) Seeds



(J) Floral diagram

Fig. 2 Taxonomic features of *Abutilon indicum* (L.)

4.2 Useful parts :

Roots, stem, barks, leaves, flowers, fruits, seeds and whole plant.

4.3 Ethnomedicinal uses :

Abutilon indicum (L.) is one of the plant species with potential medicinal properties. The whole plant and different parts of the plant are used to cure many human ailments. The ethnomedicinal uses of various parts of the plant *Abutilon indicum* (L.) are as follows :

4.3.1 Root :

- The root of the plant is used as diuretic, aphrodisiac, antidibetic and nervine tonic. It is also used to treat gonorrhoea and other forms urethritis^{42,44}.
- The decoction of roots is given internally to treat bronchitis, chest pains and all types of dysurias. It is also applied as a wash in eye diseases^{42,44}.
- The infusion of roots is given to treat fever, leprosy, stranguary, piles, leucoderma, haematuria, dry cough, bronchitis and stones in bladder^{46,47}.

4.3.2 Stem bark :

- The stem bark is used as a diuretic, sedative, anthelmintic, pulmonary and sedative. It is also used in fever⁴⁴.
- The stem bark is also used to treat urinary complications, gastrointestinal issues and strangury¹.

4.3.3 Leaf :

- The leaf juice mixed with Jaggery is used for the treatment of snakebite as antidote⁴⁸.
- The leaf Juice mixed with decoction of onion is used to treat Joundice and disorders of liver³⁵.
- The extract of fresh leaves is mixed in cow ghee in equal quantity, about two spoons of it is administered daily for three days to regularise menstruation⁴⁹.
- The leaves and seeds are crushed with water to form paste which is applied to penis to cure syphilis^{50,51,52}.
- The leaf paste is taken orally to cure piles and to relieve leg pains⁵³.
- The decoction of leaves is given to treat fever, urethritis, gonorrhoea, bronchitis, bilious diarrhoea, bladder inflammation, diabetes and hemorrhoids^{1,53}.
- The leaves are used to make chatney and help relieve indigestion.
- The decoction of leaves is used as mouth wash and eye wash, in toothache and tender gums. It is also used as wash in gonorrhoea, wounds, ulcer and in vaginal infiction³⁵.
- The bread prepared from the mixture of leaf powder and wheat flour is taken daily during night for about one month for cure of uterous displacement⁵⁴.



4.3.4 Flower :

- The flowers are used to increase semen in men³⁵.
- The pest of flowers is applied externally to treat ulcers and boils⁵⁵.
- The powder of flowers or raw is used to treat stomach aches.

4.3.5 Fruit :

- The fruit is used to treat piles, gonorrhoea and cough^{56,57}.
- The fruit decoction mixed with ammonium chloride is given orally with water to treat hemorrhagic septicemia⁵⁸.

4.3.6 Seed :

- The seed powder is taken orally as a laxative and aphrodisiac with water¹.
- The seeds are used in the treatment of cough, puerperal disease, urinary disorders, chronic dysentery and fever^{35,59}.
- The seeds are also used for bronchitis, dysuria, diabetes, dysmenorrhoea, diarrhoea, boils, piles and skin ulcers³⁵.
- Rectum of children's affected with thread worms are exposed to the smoke of seeds burned on charcoal⁶⁰.

4.3.7 Whole plant :

- The whole plant is used as aphrodisiac, anti-inflammatory, immune and in piles³⁵.
- The whole plant is also used to treat blood dysentery, fever and allergy²¹.
- The whole plant is also used in Siddha system of medicine as a remedy for Jaundice, piles, ulcer and leprosy⁶¹.
- The powder of whole plant is mixed in honey in equal quantity, about two spoons of it is administered daily for 6 months until the day of marriage, for a safe and quick pregnancy⁶².
- Entire plant and seeds are used as demulcent, lenitive, diuretic and laxative⁷.

5. CONCLUSION :

Based on the results of present study, it can be concluded that review article provides valuable information on taxonomy and ethnomedicinal uses of *Abutilon indicum* (L.) which can be helpful for the taxonomist, botanist, ethnobotanist, pharmacognosist, pharmacologist and for the collection and identification of plant for re-research work. In view of the nature of the plant more research work should be carried out so that drugs with multifarious effects would be available in future.

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