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Shubha Chaurasia
Research Scholar, Department of Botany, Government PG College, Tikamgarh, Madhya Pradesh, India

Dr. Vijay Singh Sakya
Assistant Professor & Head Department of Botany Government PG College, Tikamgarh, Madhya Pradesh, India

Corresponding Author:
Shubha Chaurasia
Research Scholar, Department of Botany, Government PG College, Tikamgarh, Madhya Pradesh, India

Medicinal properties of *Abutilon indicum* L.

Shubha Chaurasia and Vijay Singh Sakya

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Abstract
The Malvaceae family includes the widespread Indian plant *Abutilon indicum*, which is sometimes referred to as marshmallow in English. As a medicinal plant, *A. indicum* is utilized. In traditional medicine, it has been widely used as a laxative, emollient, analgesic, anti-diabetic, anti-inflammatory, and blood tonic agent. It has also been used to treat leprosy, urinary disease, jaundice, piles, thirst, wounds and ulcers, vaginal infections, diarrhea, rheumatism, mumps, pulmonary tuberculosis, bronchitis, allergy, blood dysentery, and certain neurological and ear issues. Numerous investigations on the plant extract have been conducted to validate the plant's anti-oxidant, anti-bacterial, analgesic, anti-inflammatory, anti-cancer, hepato-protective, immuno-modulatory, and larvicidal properties. Although it is regarded as invasive on some tropical islands, this plant is frequently utilized as medicine. *A. indicum* (leaves) is used as a pulmonary and sedative, diuretic, aphrodisiac, demulcent, and laxative in traditional medicine. The bark has diuretic and astringent properties; the seeds are laxative, expectorant, and demulcent; the plant is laxative and tonic, anti-inflammatory, and anthelmintic; the roots are diuretic and for leprosy. The herb is often utilized in Siddha remedies. Actually, Tamils use the bark, root, leaves, blossoms, and seeds for medicinal purposes. The blossoms are traditionally used to stimulate men's semen, while the leaves are also used to alleviate pile problems. Alkaloids, saponins, amino acids, flavonoids, glycosides, and steroids were all detected by the phytochemical study.

Keywords: *Abutilon indicum*, medicinal plant, Indian shrub

Introduction
South Asia is home to the native plant *Abutilon indicum*, often known as Mahabala or Kanghi in Hindi. In the world of pharmacy, nature is our best friend. Without any negative effects, natural medications work well. Often known as "Country Mallow", *A. indicum* L. sweet (Malvaceae) is a perennial plant that can grow up to three meters in height. A gift from nature, medicinal plants help people live healthy, disease-free lives. In order to maintain our health, it is essential. One of the world's most medically and culturally varied nations is India, where the use of medicinal plants is a long-standing custom that is still valued today. Ayurveda, Unani, and Siddha are the three primary traditional medical systems in this area (Kotnis *et al*., 2004) [5]. Since ancient times, different portions of medicinal plants have been utilized to treat a variety of illnesses in India. *A. indicum* is one such plant in this context.
About 150 annual or perennial herbs, shrubs, or even small trees are found in the genus *Abutilon indicum* L. of the Malvaceae family, which is extensively dispersed in tropical and subtropical regions of America, Africa, Asia, and Australia. Recent years have seen a resurgence of scientific interest in studying the species, and some of its plants are highly regarded Ayurvedic remedies (Sikorska and Matlawska, 2008) [8].

Medicinal uses
It helps with worms, ulcers, blood disorders, gout, and tuberculosis. It has a variety of uses, including aphrodisiac, laxative, expectorant, diuretic, astringent, analgesic, anti-inflammatory, anthelmintic, and demulcent. For toothaches and sore gums, take this decoction. Leaf demulcents are administered locally on ulcers and boils. Roots are recommended for urethrities, fever, and chest infections. The height of *A. indicum* L. is 3 m. The root and bark have long been used as a diuretic, nervine tonic, aphrodisiac, and anti-diabetic. Urinary problems are treated using seeds. The seeds are used to treat coughs and piles as a laxative. The presence of amino acids, glucose, fructose, and galactose was revealed by the phytochemical analysis of *A. indicum* leaves.

The roots produced a non-drying oil that contained a variety of fatty acids, including linoleic, oleic, stearic, palmitic, lauric, myristic, caprylic, capric, and unique fatty acids with sitosterol, amyrin, and a carbon skeleton (Chatterjee and Prakash, 1991) [3].

Research on *A. indicum* L.

The plant has analgesic, anti-inflammatory, anti-diabetic, and antioxidant properties, according to study on *A. indicum* L.

Major chemical constituents

The major constituents of this plant are: Hescoses, n-alkane mixtures, alkanols, B sitasterol, Vanilllic, p-coumaric, acceic, fumaric and amino acids, alantaolactone and isoalantolactone etc.

Antioxidant and antibacterial activity of *A. indicum* L.

In this study, the antibacterial and antioxidant properties of *A. indicum* were examined. ABTS, FRAP, DPPH, and oleic acid peroxidation techniques were used to measure the total antioxidant activity of oils. These techniques demonstrated that the seed oils of this shrub included the slow-reacting and fast-reacting components. Gram-positive and gram-negative bacteria were susceptible to the broad spectrum of activities exhibited by the seed oils of *A. indicum*. According to the research, seeds of the Pakistani native Abutilon species have the potential to be a useful herb for the manufacture of oil, the delivery of medications, and the active compounds used in cosmetics (Kashmiri *et al*., 2009) [4].

Analgesic activity of *A. indicum* L.

Rajurkar *et al*. (2009) [7] assessed the analgesic efficacy of several extracts from the root of *A. indicum* L. The 900 g of powdered root was extracted using a soxhlet device for 72 hours using petroleum ether (60 to 80 °C), methanol, and ethanol in increasing order of polarity. To get a water-soluble extract, they cold macerated the marc for 72 hours. Swiss albino mice weighing 20 to 30 g were used to study the peripheral analgesic activity using the acetic acid-induced writhing method, while the tail flick and tail immersion methods were used to assess the central analgesic activity. The findings showed that in both animal models, every studied extract-aside from methanol extract-displayed a notable analgesic effect. Higher analgesic efficacy was demonstrated by petroleum ether extract. The activity could be caused by peripheral analgesic pathways or central mechanisms. As a result, they confirmed that *A. indica* is used traditionally.

Anti-inflammatory activity of *A. indicum* L.

The HRBC membrane stabilization technique was used to examine the anti-inflammatory properties of *A. indicum* L. sweet leaves. The leaves' aqueous, chloroform, and ethanolic extracts were tested for anti-inflammatory properties. They used the inhibition of HRBC membrane lysis brought on by hypotonicity as a gauge of anti-inflammatory efficacy. The membrane stability was affected in two phases by each of the three portions. It was discovered that their actions were similar to those of the common medication diclofenac sodium. But with time, their activities dwindled. The extracts were supposed to act either by inhibiting the lysosomal enzymes or by stabilizing the lysosomal membrane (Rajurkar *et al.*, 2009) [7].

Anticancer activity of *A. indicum* L.

This medicinal plant was selected for examination in order to check for cytotoxic action and possible antioxidant qualities. FRAP, 1, 1-Diphenyl-2-picrylhydryzyl [DPPH] radical scavenging activity, and nitric oxide radical inhibition, which was calculated using the Griess Illosvoy reaction with minor modifications, were also used to screen the extract for antioxidant activity. The extract show anti-oxidant properties as well as, inhibitory effect on cancer cells with increased concentration and duration (Porchezhian and Ansari, 2005) [6].

Hepatoprotective activity of *A. indicum* L.

The hepatoprotective effect of the plant's aqueous leaf extract against hepatotoxicity caused by carbon tetrachloride and paracetamol was investigated. Oral administration of the extract resulted in an LD50 value greater than 4 g/kg body weight. Additionally, the study demonstrated that the administration of carbon tetrachloride and paracetamol raised the levels of alkaline phosphate, total bilirubin, direct bilirubin, serum glutamic oxaloacetate transaminase, and serum glutamic pyruvate transaminase while lowering liver glutathione levels. The extract pretreatment raised liver glutathione levels and restored normality by lowering serum levels of total bilirubin, direct bilirubin, alkaline phosphate, serum glutamic oxaloacetate transaminase, and serum glutamic pyruvate transaminase. The regular silymarin had an effect similar to this one. It was discovered that the extract's mode of action involved interfering with cytochrome P450, which prevented the generation of free radicals. It has been speculated that in the case of paracetamol induced hepatotoxicity, the hepatoprotective effect of the extract could be due to promotion of glucuronidation (Appaji *et al.*, 2009) [2].

Immuno modulation activity of *A. indicum* L.

An Ayurvedic treatment called "Bala compound" is used to boost an infant's immune system and shield them from frequent illnesses. *A. indicum* is one of the main components of this Ayurvedic medicine. A clinical study with this compound confirmed that administration of the compound to neonates resulted in an increase in antibody levels such as IgG, IgM and IgA after three to six months of administration (Surendra and Naveen, 2010) [9].

The ethanolic and aqueous extracts of *A. indicum* leaves (200 and 400 mg/kg) were tested for immunomodulatory action using the carbon clearance test, neutrophil adhesion test, and Hemagglutination Antibody (HA) Titre Delayed Type Hypersensitivity (DTH). According to the study, the extract significantly raised the primary and secondary HA titres. Additionally, it demonstrated a markedly enhanced DTH response and a rise in the proportion of neutrophil adhesion test results.

The study's findings revealed that the extract significantly stimulated both specific and non-specific immune responses. Alkaloids, tannins, saponin glycosides, phenolic chemicals, and flavonoids (quercetin) were claimed to be responsible for this activity (Abdul *et al*., 2008) [1].

Larvicidal activity of *A. indicum* L.

The early fourth-instar larvae of *Culex quinquefasciatus* were used to test the toxicity of crude ethyl acetate, hexane, acetone, petroleum ether, and methanol extracts of five medicinal plants: *A. indicum*, *Aegle marmelos*, *Jatropha gossypifolia*, *Euphorbia thymifolia*, and *Solanum torvum*. Larval mortality was noted following a 24-hour exposure period. Moderate larvicidal effects were shown by all extracts. However, the petroleum ether extract of *A. indicum* showed the highest larval mortality. A β-sitosterol was isolated and identified as a possible new mosquito larvicidal compound in

the current study through bioassay-guided fractionation of *A. indicum*. Its LC_{50} values against *Aedes aegypti* L, *Anopheles stephensi* Liston, and *C. quinquefasciatus* Say (Diptera: Culicidae) were 11.49, 3.58, and 26.67 ppm, respectively. The identification of the active compound was validated by mass spectrum data, H NMR, and C NMR.

It has been established that β-sitosterol is the active component of numerous preparations from medicinal plants. When tested for larvicidal properties, all of the crude extracts showed toxicity to *C. quinquefasciatus* larvae.

The bioassay results for the crude extracts and the isolation and identification of β-sitosterol are reported in this publication. The larvicidal properties of *A. indicum* are being assessed for the first time, and there are no reports of β-sitosterol in the genus. The study's findings showed that β-sitosterol is a novel natural mosquito larvicidal agent and that the petroleum ether extract of *A. indicum* may be a powerful source.

Conclusion

According to a thorough examination of the literature, *A. indicum* L. is a significant medicinal plant. Numerous research using extracts from the various plant sections have been conducted. The current study provides an overview of some significant medical research on the hepatoprotective, wound-healing, immunomodulatory, analgesic, antimalarial, antimicrobial, and hypoglycemic properties of *A. indicum*. It also identifies phytochemical studies and the principles that can be extracted from them to produce lead molecules for the development of new herbal medications. Future study on *A. indicum* has a lot of potential because of its therapeutic qualities; more clinical and pharmacological studies should be carried out to explore the plant's untapped potential.

Therefore, an attempt has been made in this review paper to gather and synthesize detailed information on *A. indicum* that will help society explore the realm of alternative medical systems.

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References

1. Abdul RA., Geetha G, Venkatesan P, Kannappan G. Isolation and identification of mosquito larvicidal compound from *Abutilon indicum* (Linn.) Sweet. Parasitol. Res. 2008; 102(5): 981-988.
2. Appaji RR, Sharma RD, Katiyar GP, Sai AJVP. Clinical study of the Immunoglobulin enhancing effect of “Bala compound” on infants. Anc. Sci. Life. 2009;28(3):18-22.
3. Chatterjee A and Prakash C. The treatise on Indian Medicinal Plants, Publication & information directorate, New Delhi, 1991, p. 174-175.
4. Kashmiri MA, Yasmin S, Ahmad M, Mohy-ud-Din A. Characterization, compositional studies, antioxidant and antibacterial activities of seeds of *Abutilon indicum* and *Abutilon muticum* Grown Wild in Pakistan. Acta Chim. Slov. 2009;56:345-352.
5. Kotnis MS, Patel P, Menon SN, Sane RT. Reneprotective effect of Hemisdesmus indicus an Herbal drug used in Gentomicin-Induced Renal toxicity. Nephrol. (Carlton). 2004;9(3):142-152.
6. Porchezhian E, Ansari SH. Hepatoprotective activity of *Abutilon indicum* on experimental liver damage in rats. Phytomedicine. 2005;12(1-2):62-64.
7. Rajurkar R, Jain R, Matake N, Aswar P, Khadbadi SS. Antiinflammatory Action of *Abutilon indicum* (L) Sweet Leaves by HRBC Membrane Stabilization. Res. J. Pharm. Tech. 2009;2(2):415-416.
8. Sikorska M, Matlawska I. Polyphenolic compounds from *Abutilon grandiflorum* leaves. Acta Poloniae Pharmaceutica Drug Research. 2008;65(4):467-471.
9. Surendra Kr S, Naveen G. Preliminary Phytochemical and Pharmacognostic Profile of *Abutilon indicum* Linn. Root, Scholars Research Library Der Pharmacia Lettre. 2010;2(5):308-315.