ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

A REVIEW ON PHYTOCHEMICAL AND PHARMACOLOGICAL PROPERTIES OF *Abutilon indicum*

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Manuscript Info

Manuscript History:

Received: 14 January 2016
Final Accepted: 26 February 2016
Published Online: March 2016

Key words:
Traditional medicine,
Pharmacological,
anti diabetic,
anti inflammation.

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Abstract

Abutilon indicum belonging to family Malvaceae is distributed throughout number of tropical and subtropical areas Abutilon indicum is used in piles, inflammation, gonorrhea treatment and as an immune stimulant. Root and bark are used as aphrodisiac, anti diabetic, nervine tonic, and diuretic. Seeds are used as aphrodisiac and in urinary disorders. Thus the aim of present review is to provide detailed information on the phytochemical and pharmacological properties of *Abutilon indicum.*.

Introduction:-

The *Abutilon indicum* L. genus of the Malvaceae family comprises about 150 annual or perennial herbs, shrubs or even small trees widely distributed in the tropical and subtropical countries of America, Africa, Asia and Australia [14]. It is known as "Atibala" in Hindi and found in the outer Himalayan tracts from Jammu to Bhutan up to an altitude of 1500m and extending through the whole of northern and central India [12]. In traditional medicine, A. indicum is used as a demulcent, aphrodisiac, laxative, diuretic, and pulmonary and sedative (leaves). The bark is astringent and diuretic; laxative, expectorant and demulcent (seeds), laxative and tonic, anti-inflammatory and anthelmintic (whole plant), analgesic (fixed oil), diuretic and for leprosy (root)[10].

Botanical description:-

The leaves are ovate, acuminate, toothed, rarely subtrilobate and 1.9-2.5 cm long. The flowers are yellow in color, peduncle jointed above the middle. The petioles 3.8-7.5 cm long; stipules 9 mm long; pedicels often 2.5-5 mm long, axillary solitary, jointed very near the top; calyx 12.8 mm long, divided in to middle, lobes ovate, apiculate and corolla 2.5 cm diameter, yellow, opening in the evening. The fruits are capsule, densely pubescent, with conspicuous and horizontally spreading beaks. The stems are stout, branched, 1-2 m tall, pubescent. The seeds are
3-5 mm, reniform, tubercled or minutely stellate-hairy, black or dark brown [2,5,7,9].

Taxonomical classification:-

Kingdom : Plantae
Class : Magnoliopsida
Order : malvales
Family : malvaceae
Genus : *Abutilon*
Species : *indicum*

Vernacular name:-

English : Indian mallow

Hindi : Kanghi
Bengali : Badela
Sanskrit : Kankatika,Rsyaprokta
Telgu : Tutturubenda
Oriya : Pedipidika
Tamil : Tutti

Chemical constitutes:-

Phytochemical investigation of *A. indicum* leaves showed the presence of amino acids, glucose, fructose and galactose. 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 [12]. Alkaloids, flavonoids, steroids, terpenoids and saponins have been isolated and characterized from genus Abutilon. Previous phytochemical investigations of *Abutilon indicum* showed it to contain two sesquiterpene lactones, gallic acid, β-sitosterol, geraniol and caryophylline [8]. Petroleum ether extract of this plant is also a potent source of natural mosquito larvicidal agent [11]. Kuo et al. [6] isolated two new compounds, abutilin A and (*R*)-*N*-(1'-methoxycarbonyl-2'-phenylethyl)-4-hydroxybenzamide, as well as 28 known compounds. Extract of the whole plant is said to possess decreasing peroxidative damage in liver through free radical scavenging activity due to its flavonoids [15]. Seven flavonoid compounds including quercetin and its glycosides have been isolated from flowers of *A. indicum* [3]. The analysis of phenolic compounds in plants is of considerable commercial importance, since it is known that they contribute to the flavour [4].

Pharmacological activities:-

Hypoglycemic activity

The Hypoglycemic activity of *Abutilon indicum* leaf extracts in rats was studied. Alcohol and water extracts of Abutilon indicum leaves (400 mg/kg, p.o.) showed significant hypoglycemic effect in normal rats 4 h after administration (23.10% and 26.95%, respectively)[11].

Antimalarial activity:-

Beta-sitosterol isolated from the petrollium ether extract of leaf of *Abutilon indicum* showed mosquito larvicidal activity [11].

Anti-inflammatory activity:-

Anti-inflammatory action of *Abutilon indicum* (L.) Sweet leaves by HRBC membrane stabilization technique were investigated. The ethanolic, chloroform and aqueous extracts of the leaves were screened for antiinflammatory activity. They have taken the prevention of hypotonicity induced HRBC membrane lysis as a measure of anti-inflammatory activity. All Three fractions showed a biphasic effect on the membrane stabilization. Their activities were found to be comparable to that of standard drug diclofenac sodium. However their activities
decreased with time. The extracts were supposed to be act either by inhibiting the lysosomal enzymes or by stabilizing the lysosomal membrane [12].

Anti-diarrhoeal activity:-

Leaf extracts of *Abutilon indicum* were evaluated for antidiarrhoeal activity by gastro-intestinal motility, castor oilinduced diarrhoea and prostaglandin E2- induced enteropooling in rats wherein the methanolic and aqueous extracts showed significant antidiarrhoeal activity in castor oil-induced diarrhoea and prostaglandin E2- induced diarrhoea. These extracts were reported to
reduce diarrhoea by inhibiting intestinal peristalsis, gastrointestinal motility and PGE2 induced
enteropooling [1].

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. Moreover, the decrease in epithelisation period was observed as compared to control and standard. This pro-healing was dedicated to increase in collagenation deposition as well better alignment and maturation [13].

Conclusion:-

Abutilon indicum have several pharmacological properties like, wound healing, immunomodulatory, analgesic, hepatoprotective, antimalarial, antimicrobial, hypoglycemic activity. The main chemical constituents are carbohydrates, steroids, glycosides, flavonoids, tannins and Phenolic compounds. Hence the present review summarizes some important pharmacological studies on *Abutilon indicum* and phytochemical isolated from them, which can be investigated further to achieve lead molecules in the search of novel herbal drugs.

References:-

1. **Chandrashekhar** VM, Nagappa AN, Channes TS, Habbu PV, Rao KP, Antidiarrhoeal activity of *Abutilon indicum* Linn,Leaf extract Journal of natural remedies, 4(1), 2000, 12-16.
2. **Chopra RN**, Nair SL, Chopra IC, Glossary of Indian Medicinal Plants, CSIR, New Delhi, 1956, 2.
3. **Irena M**, Maria S. Acta poloniae Pharmaceutica Drug Res 2002; 59: 227-9.
4. **Kashmiri MA**, Yasmin S, Ahmad M, Mohy-ud-Din A. Acta Chim Slov 2009; 56, 345–52.
5. **Kirtikar KR**., Basu BD, Indian Medicinal Plants, Edn 2, Vol. I, Dehradun, 1994, 314-317.
6. **Kuo PC,** Yang ML Wu PL, Shih HN, Thang TD, Dung NX, Wu TS. J Asian Natural Prod Res 2008; 10(7): 689 – 93.
7. **Nadakarni** AK, Indian Materia Medica, Popular Prakashan (Pvt) Ltd., Bombay, 1995, 8-9.
8. **Pengelly A**, Triterpinoids and saponins, in the constituent of medicinal plants, CABI publishing, USA, 2004, 74.
9. **Prajapati ND,** Purohit SS, Sharma AK, Kumar TA. Handbook of Medicinal Plants, AGROBIOS (India), Jodhpur, 2003, 3.
10. **Muhit Md.** Abdul, Apu Apurba Sarker, Islam Md. Saiful, Ahmed Muniruddin. Cytotoxic and Antimicrobial Activity of the Crude Extract of Abutilon Indicum. International Journal of Pharmacognosy and Phytochemical Research 2010; 2(1); 1-4.
11. **Rahuman AA**, Gopalakrishnan G, Venkatesan P, Kannappan G, Isolation and identification of mosquito larvicidal compound from *Abutilon indicum* (Linn.) Sweet. Parasitology Research, 102, 2008, 981-988.
12. **Rajurkar** R, Jain R, Matake N, Aswar P, Khadbadi SS, Antiinflammatory Action of *Abutilon indicum* (L.) Sweet Leaves by HRBC Membrane Stabilization. Research Journal of pharmacy and Technology, 2(2), 2009, 415-416.
13. **Roshan S**, Ali S, Khan A, Tazneem B, Purohit MG, Wound healing activity of *Abutilon indicum*. Pharmacognosy magazine, 4(15), 2008, 85-88.
14. **Sikorska** M, Matlawska I. Acta Poloniae Pharmaceutica Drug Res 2008; 65(4): 467-71.
15. **Singh D**, Gupta RS. Pharmacologyonline 2008; 1: 253-62.