

Pharmacological Potential of *Atibala* of Ayurveda : A Review

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ABSTRACT

Indigenous drugs used by different ethnic groups of the world for the treatment of diseases have special significance of having been tested on long time scale. They are relatively safe, easily available and affordable to masses of community. Traditional drugs have given the important lead in the search of new drugs. *Balas* in ayurvedic literature are used as *Balya*, or tonic for strengthening the body. *Bala*, *Brela*, *Atibala*, *Mahabala* and *Nagbala* belong to the genus *Sida* of family Malvaceae is in use for medicinal purposes for a long time, in traditional system of medicine, i.e, the ayurveda. *Sida cordata* (Burm.f.) Borssum is *Rajbala* or *Bhumibala*; *Kharenti Bala* is *Sida cordifolia* Linn.; and *Sida rhombifolia* Linn. is *Mahabala*. The other *Bala* is *Atibala*, which is botanically known as *Abutilon indicum*. Literally meaning, the *Ati* means very and *Bala* means powerful, referring to the properties of this plant as very powerful.

Keywords: *Atibala*, *Abutilon indicum*, Aphrodisiac and Traditional Medicine.

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INTRODUCTION

The generic name *Abutilon* has been derived from its arabic name *Abutilun*. *Abutilon indicum* (Linn.) Sweet (Syn. *A. asiaticum* (Linn.) Sweet; *Sida guineensis* Sch.; *S. indica* Linn.), is one of the much used species of genus *Abutilon* in traditional medicines. It is also used in preparation of various ayurvedic formulations of commercial importance. *Abutilon indicum* is known by various names at different locations in different languages^[1-6].

These are -

<i>Bengali</i>	: Jhampi, Jhumka, Petari, Potari;
<i>Cutch</i>	: Balbij;
<i>Goa & Konkani</i>	: Petari, Tupkadi;
<i>Gujarati</i>	: Dabali, Kansaki;
<i>Hindi</i>	: Jhampi, Kandhi, Kanghani, Kanghi, Potari, Tepar;
<i>Kannada</i>	: Srimndrigida
<i>Konkani</i>	: Voddlipettari;
<i>Malayalam</i>	: Jhoukaped, Katturam, Katturan, Pitikkapattu, Uram;

<i>Marathi</i>	: Akakai, Chakrabhenda, Kansuli, Karandi, Madmi, Mudra;
<i>Mumbai</i>	: Chakrabenda, Etari, Kangoi, Kangori, Madmi;
<i>Punjabi & Sind</i>	: Atikhirate, Khapate, Peelee-bootee;
<i>Sanskrit</i>	: <i>Atibala</i> , <i>Balika</i> , <i>Balya</i> , <i>Bhuribala</i> , <i>Ghanta</i> , <i>Kankati</i> , <i>Kotibala</i> , <i>Rishiprokta</i> , <i>Shita</i> , <i>Shitapushpa</i> , <i>Vikankata</i> , <i>Vatyapushpika</i> , <i>Vrishyagandha</i> , <i>Vrishyagandhika</i> ;
<i>Tamil</i>	: Nallatutti, Paniyarattutti, Perundutti, Ponnaithuthi, Tutti;
<i>Telugu</i>	: Adavibenda, Botlabenda, Dudi, Kammalaku, Papidlakaya, Thuthurbenda, Tutti;
<i>Uriya</i>	: Nakochoho;
<i>English</i>	: Country Mallow.

Description

This is an herbaceous or shrubby, softly tomentose, perennial plant. Leaves are up to 9 cm long and 5 cm broad, cordate, ovate, acuminate, toothed and rarely sub-

trilobate. Petioles are 3.8-7.5 cm long and stipules 9 mm. long, linear, acute, and deflexed. Pedicel is often 2.5-5 cm long, axillary, solitary and is jointed very near the top. Calyx is 12-8 mm long, divided to the middle; lobes ovate, apiculate. Corolla is 2.5 cm in diameter and is yellow; open in the evening. Staminal tube is hairy at the base; filaments long. Carpels are usually 15-20, longer than the calyx, with a distinct small acute point, hairy, ultimately shining and dark brown. Seeds are brown-black, densely and minutely scrobiculate.^[4-9]

The flowering and fruiting in this plant is seen almost throughout the year, but chiefly during the months of August-December. This is very commonly found almost in every region of India and other neighboring countries like Sri Lanka, Pakistan, Nepal, etc. In India, it is met frequently as a weed in the Sub-Himalayan tracts and hills upto 1200 m. Also in the hotter parts of the country.^[10-12]

Medicinal Uses

Bala's plants are in use since Vedic times. Theirs' references met in the Athurveda (Paplad Samhita 19/39/1-14). In



vedic periods, the roots of the *Bala* plants were used to remove poison, *vata-pitta* diseases, eye diseases, heart problems, bily blood and uterine disorders. In fever its seeds and roots both were used in the form of decoction i.e., powdered plant material dissolve in water or any other solvent.^[13]

In modern days, the seeds of the plant are known as aphrodisiac, laxative and expectorant and are used in cough, gonorrhoea, gleet and chronic cystitis. The leaves are known as demulcent and are applied to boils and ulcers. Their fomentation is used for painful parts of the body. They are cooked and eaten in bleeding piles and their decoction is used in toothache and tender gums. These are also given for enema and vaginal infections. Its bark has a sharply bitter taste and is considered febrifuge, anthelmintic and alexteric^[3-4], and is used to remove *vata* and *tridosha* and to allay thirst, vomiting and to lesson perspiration^[12]. It is also used as astringent and diuretic. The flowers of the shrub are applied to boils and ulcers and their powder in ghee is eaten for blood vomiting and cough. Its roots are nervine tonic and are used in piles and leucoderma^[14] and also in strangury, haematuria, bladderstones and as a wash in the eye diseases.^[15] Besides, the powder of the roots is used in cough and leprosy.^[16]

In addition, Alcohol and water extracts of its leaves showed significant hypoglycaemic effect^[17] and methanolic extract and aqueous extract anti-diarrhoeal activity *in vitro*.^[18]

Ethno-Botanical uses

The plant is used in the neurological disorders, epistaxis and heart diseases^[19-22], as astringent, diuretic, demulcent^[23], in rheumatism^[24-25] and post delivery complaints in cattle.^[25] Stem and bark of the plant are used as febrifuge, anthelmintic, alexteric, diuretic^[26-27] and in renal colic.^[2] Flowers are antipyretic, useful in impotency as fertility enhancer, in piles and gonorrhea.^[3] The seeds are used as aphrodisiac^[4,5,12], in fever^[5], cough^[7], bronchitis, piles, gonorrhea^[10-11,22-23]. Leaves are used in toothache^[12,19], as demulcent^[20-21], inflammation and wounds^[24], for stomachache, diabetes, diarrhoea, hydrococle^[28], jaundice^[29], boil^[30], piles^[31-33], headache^[34-35], as a tonic, in rheumatism^[36] and as an antipyretic agent^[37] and leaf-decoction in gonorrhoea and inflammation of the bladder.^[38] Roots of plant are antipyretic^[39-44] and used are in uterine haemorrhagic discharge^[45], leprosy^[46-48], leucorrhoea and menorrhagia^[49], toothache^[50] and as antiepileptic^[51] and on cuts and wounds^[52-53]. Besides, the decoction of its stem-bark or that of leaves is used for gargling in mouth ulcers and leaves alone are chewed and kept in mouth to reduce the heat^[54].

Chemical Studies

Abutilon indicum contains gum resin and mucilage^[50] but is devoid of tannins.^[55] The petroleum ether extract of the plant yielded two sesquiterpene lactones identified as alantolactone and isoalantolactone^[51] and gallic acid.^[52] The aerial parts of the plant on extraction with petroleum ether led the isolation of n-alkane mixture, n-alkanol fraction and β -sitosterol, vanillic, p-coumaric acid, p-hydroxybenzoic, caffeic and fumaric acids, p- β -D-glucosyloxybenzoic acid and gluco-vanilloyl glucose, fructose, galactose, glucose, leucine, histidine, threonine, serine, glutamic acid and aspartic acid. Its mucilage fraction showed the presence of galactose and galacturonic acid.^[55]

The essential oil of plant yields β pinene, caryophyllene, caryophyllene oxide, 1,8-cineole, ceraneol, ceranyl acetate, eudesmol and farnesol^[56], while α -pinene, borneol, geraniol, geraniol acetate and tetradecane are reported from the oil obtained from flowering tops of the plant^[57]. Its flower petals had shown the presence of gossypetin-8-glucoside, gossypetin-7-glucoside and cyanidin-3-rutinoside.^[58] Saponins, flavonoids and alkaloids have been isolated from the short flowers of the plant.^[59]

Its seeds contain raffinose as the sugar component. Chemical analysis of its seed-oil reveals the presence of lenolenic, linoleic, oleic, palmitic, stearic^[60-61], malvalic, sterculic and 12,13 epoxyoleic acids.^[62] Crude protein, pentosan and water soluble mucilage contents have also been isolated from its seeds.^[63] Three HBr-reactive fatty acids viz. cis-12,13 epoxyoleic (vernolic acid), 9,10-methylene-octadec-9-enoic (sterculic acid) and 8,9-methylene-heptadec-8-enoic (malvalic acid) are also identified in its seed-oil. Amino acid profile of the seed proteins (31.0%) indicated to contain asparagine, threonine, serine, glutamine, proline, glycine, alanine, cysteine, methionine, isoleucine, valine, leucine, tyrosine, phenylalanine, histidine lysine and arginine.^[64] Its fruits are reported to contain flavonoids and alkaloids.^[59]

β -sitosterol and tocopherols have been reported from its leaves.^[65] In addition, the roots of *A. indicum* contain flavonoids, steroids, sterols, terpenes and terpenoids.^[66-67] Besides, the preliminary chemical studies revealed the presence of cyanogenetic glycosides, saponins, cardiac glycosides, tannins, phenolic compounds and alkaloids in leaves, stem, and roots of the plant.^[68]

Uses in Commercial Formulations

Along with its uses in ethnobotanical aspects, the plant is being used in making various ayurvedic preparations of

commercial importance. The important ones include: Bala taila, Atibalaghrit, Mahanarayan taila and Mahavishgarbh taila.^[5,12] It also forms one of the ingredients of *Chayvanprash Linctus*, used as a general tonic for restoring health and vigour in each and everyone's house in India.

CONCLUSION

Various plants have been widely used as curative agents for variety of ailments since the time immortal. Some of them are used to strengthen the body. The extensive survey of literature revealed that *Abutilon indicum* is an important plant of ayurveda. It is being used since a long time in making ayurvedic drugs. Medicinally coumarins have diuretic activity, saponins hypoglycemic and antifungal activities. Linoleic acid, oleic acid, palmitic acid, lauric and stearic acids and other fatty acids found in the plant claim analgesic activities. β -sitosterol is reported to possess antipyretic reactions and flavonoids hypoglycemic activities^[69]. Besides, the gum and resin obtained from the plant are used in rheumatism and show antiplasmitary reaction, which support the use of this plant for the various purposes since ancient times. Thus, the chemicals found therein possess various utilities and they can be used to yield the better results in making commercial drugs in allopathic system of medicine. So the importance of this plant should not be neglected.

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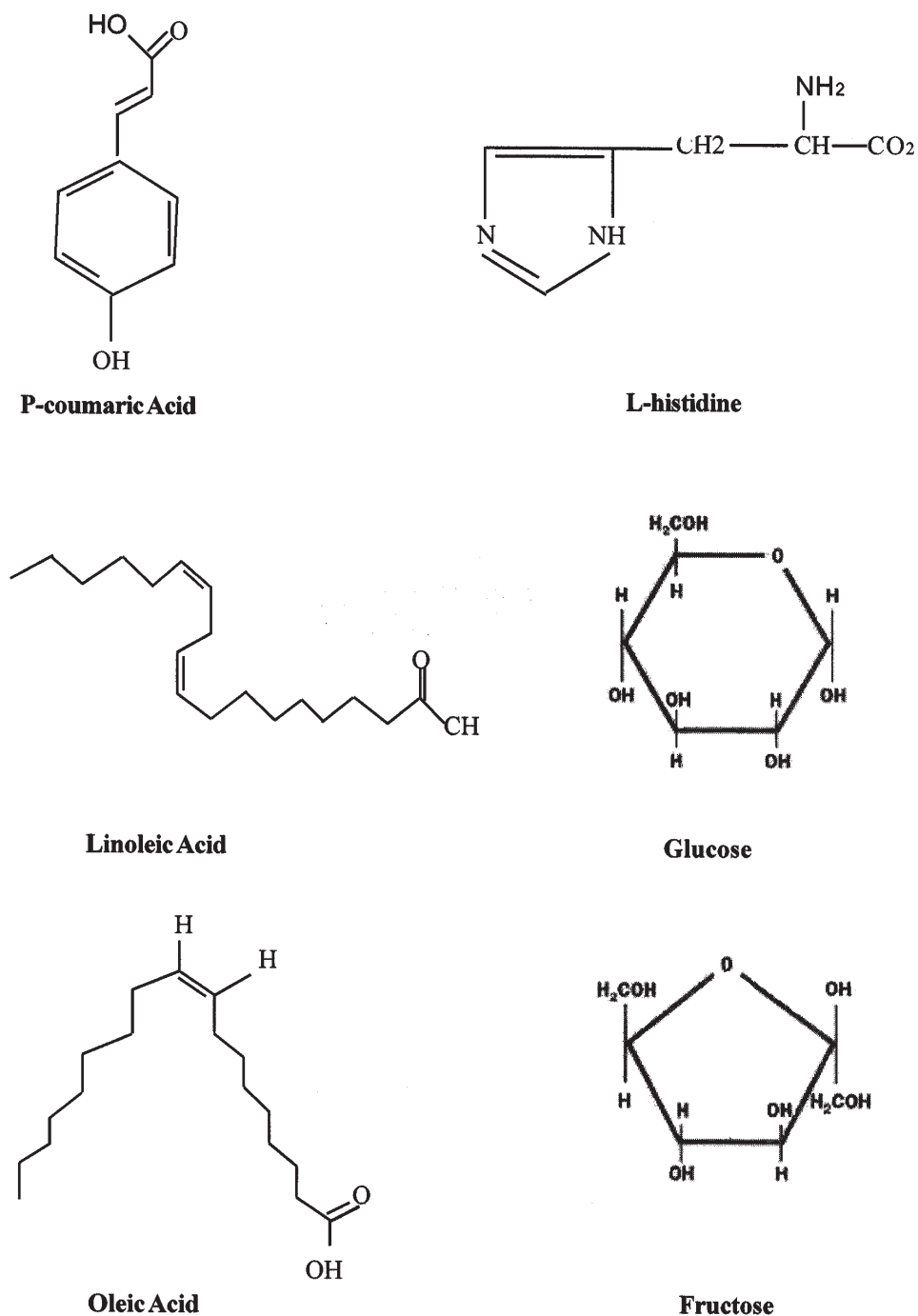


Figure 1 : Important Chemical Constituents

Pharmacological Potential of *Atibala* of Ayurveda : A Review

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Pharmacological Potential of *Atibala* of Ayurveda : A Review

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