

## MILLINGTONIA HORTENSIS LINN – AN OVERVIEW

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### ABSTRACT

*Millingtonia hortensis* Linn. is cultivated in most parts of India, both in gardens and avenues. Tall and straight, with comparatively few branches, its popularity lies in its ornamental value. It is a fine tree, fast growing, but with brittle wood, liable to be damaged by storms. In favourable positions it can grow to 24 m tall. The ashy bark is cracked and furrowed and the numerous fissures make removal of the cork an easy matter. It is used as an inferior substitute for true cork. From April until the rains and again in November and December, a profusion of silvery-white, delightfully fragrant flowers crown the foliage. Upright open clusters with arching blooms terminate every branchlet. Each flower is a tiny bell-shaped calyx, a long slender tube of palest green dividing into four waxy, white petals and several conspicuous yellow anthered stamens. Many flowers are delicately tinted with rose. As the flowers are short-lived, the flower sprays mostly consist largely of long whitish buds, while the ground below is spangled with innumerable little stars. Between January and March the leaves are shed and renewed during April and May, although the tree is never quite naked. Trees do not seed very easily in India.

**Keywords:** *Millingtonia hortensis* Linn, Calyx, *Escherichia coli*, Indian cork tree.

### INTRODUCTION

*Millingtonia hortensis* Linn. (Syn *Biognonia suberosa* Roxb., *Biognonia azedachta* Koen.) Is an important medicinal plant in Southern Asia, ranging from India, Burma, Thailand and Southern China. Mill-in-TOH-nee-uh -- named for Thomas Millington, an English botanist, horten-sis -- meaning, of or in gardens; cultivated. Commonly known as: Indian cork tree, tree jasmine, Hindi: neem chameli, Kannada: akash mallige, berat, birate mara, Konkani: akasnimb, Malayalam: katesam, Marathi: akash chameli, buch, or kaval nimb, Oriya: bakeni, mach-mach, sitahara, Tamil: kat-malli, Telugu: kavuki. Origin: Myanmar (Burma).

The leaves of *Millingtonia hortensis* are used as antipyretic, sinusitis, cholagogue and tonic in folklore medicine. According to mythology, this is a heavenly tree brought to earth by the god Krishna. A quarrel over it ensued between Satyabhama and Rukmini, Krishna's wives. But Krishna planted the tree in Satyabhama's courtyard in a way that when the tree flowered, the flowers fell in Rukmini's courtyard. Another romantic story woven around the tree is about Parijataka, a princess. She fell in love with the sun but when he deserted her she committed suicide and a tree sprung from the ashes. Unable to stand the sight of the lover who left her, the tree flowers only at night and sheds them like tear-drops before the sun rises.

### Detailed Description of *Millingtonia hortensis*:

A very tall tree, Flowers have very rich & pleasant scent. It is a drought resistant tree. The Biological name of *Millingtonia hortensis* belonging to the family of Bignoniaceae. Propagation by Seeds, suckers. Longevity is Perennial. The Other names of this crude drug is Akas Nim, Nim Chameli, Betati Nim, Mini Chameli, Karkku, Kat Malli, Kavudi are some of the other names used for the

Cork Tree. It is a tall deciduous tree. It grows up to 25 meter. The leaves are pinnately compound.<sup>1</sup> Long leaves bear two or three widely spaced pinnae, each with 5-7 smooth leaflets, oval, pointed and slightly round-toothed, 1-3 inches long. Sometimes the lower pinnae are again divided and bear one pair of three leaved pinnae, 1-2 pairs of leaflets and one leaflet at the end. Flowers in corymbose panicles, long tubular, silvery-white and delightfully fragrant. The fruit is a capsule. It flowers at night and shed flowers early in the morning. It has corky bark. It has straight trunk and has few branches. The other species are *Phellodendron amurense*, *Phellodendron chinense*, *Phellodendron japonicum*, *Phellodendron lavalleyi*, *Phellodendron sachalinense*, *Phellodendron wilsonii* are the other related species of the Cork tree.<sup>2,3</sup> Cork tree widely grows in the Central India. It is mostly found in the tropical forests. Cork tree can grow in variety of soils. It requires full sunlight for its growth. Stem and roots of the Cork tree have great medicinal value. Its dried flower is a good lung tonic. It is also used in the cough diseases. Its flowers are used in the rituals. Its bark is used to produce yellow dye.

### Scientific classification:

Kingdom	:	Plantae
Division	:	Magnoliophyta
Class	:	Magnoliopsida
Order	:	Lamiales
Family	:	Bignoniaceae
Genus	:	<i>Millingtonia</i>
Species	:	<i>M. hortensis</i>
Scientific Name	:	<i>Millingtonia Hortensis</i> L.f.



**Indian cork tree**

This fast growing tree flowers at night and sheds flowers early in the morning. The name *Millingtonia* comes from Thomas Millington, an English botanist, while *hortensis* means "grown in gardens". The tree is a favorite garden tree. It is also called the Cork Tree, as an inferior cork is processed from its corky bark. In the cooler months tree blooms in the night and early in the morning; fragrant flowers falling and carpeting the ground around. The tree has a straight trunk and only a few branches. Leaves are very ornamental, even when not in bloom this plant is an eye stopper. Flowers are white, waxy, trumpet-shaped and somewhat two lipped with five subequal lobes. The tree flowers from October till the end of December. The flowers are used in rituals. Because of the perfume of the flowers they are very much sought after. The waxy characteristic of the flowers ensure their freshness for a long time. Extract of the leaves of *Millingtonia hortensis* has good antimicrobial activity. Dried flower - bronchodilator, root - lung tonic. Between January and March the leaves are shed and renewed during April and May, although the tree is never quite naked. The long leaves bear two or three widely spaced pinnae, each with five or seven smooth leaflets, oval, pointed and slightly round-toothed. Each is from 1 to 3 inches long. Sometimes the lower pinnae are again divided and bear one pair of three leaved pinnae, one or two pairs of leaflets and one leaflet at the end. The fruit is very long and narrow, pointed at both ends and contains thin, flat seeds. Trees do not seed very easily in India.

**Pharmacognostical description:**

Leaves opposite, 2- or 3-pinnately compound; leaflets ovate, entire. Inflorescences cymose-paniculate, terminal. Calyx cupular, small, apex subtruncate, with very short teeth. Corolla bilabiate, tube long and narrow, upper lip 2-lobed, lower lip 3-lobed; lobes valvate, ovate-lanceolate, densely pubescent adaxially along margin. Stamens 4, didynamous, inserted high in corolla tube; 1 anther cell fertile and ellipsoid, another caudate and appendage-like. Disc annular-cupular. Ovary sessile, ovoid. Style long; stigma lingulate, compressed, 2-lobed, slightly exerted from corolla tube. Capsule dehiscent septically, long linear, compressed. Seeds in several rows, minute, compressed, winged.

**Physical Description:**

Trees 8-25 m tall. Leaves 40-100 cm; petiolule ca. 1 cm; leaflets elliptic, ovate, or ovate-oblong, (2-) 5-7 X 1.5-4 cm, glabrous, base rounded, oblique, margin entire, apex acuminate; lateral veins 4 or 5 on each side of midrib. Inflorescences cymose-paniculate, ca. 25 cm in diam.; peduncle and pedicels pale yellow pubescent; bracts and bractlets deciduous. Pedicel slender, ca. 1 cm. Calyx small, cupular, 2-4 X 2-4 mm, sinuo-late lobed; lobes slightly reflexed. Corolla white, tube 3-7 cm, 2-3 mm in diam. at base; lobes globose in bud, ovate-lanceolate at anthesis, 1-2 cm, densely pubescent along margin adaxially. Ovary glabrous; ovules numerous, 4-rowed. Capsule linear, 30-35 X 1-1.5 cm, compressed. Seeds discoid-oblong, compressed, including wing 1.5-3.5 X 1-1.5 cm, surrounded by membranous and transparent wings. Habitat Low altitude slopes; 500-1200 m typically found at an altitude of 0 to 922 meters (0 to 3,025 feet).<sup>5</sup>

***Millingtonia hortensis* vs Pharmacological Activity:****Antifungal activity:**

**M Sharma et al** (2007) was described the Antifungal activities of different extracts of *Millingtonia hortensis* were investigated against various fungal pathogens. Methanol extract was found to have stronger activity than fluconazole against yeast like fungi: 4 fold against *Candida krusei* with 4 µg/ml minimal inhibitory concentration and 2 fold (MIC- 2 µg/ml) against *Sacharomyces cerevisiae*, though it showed the same activity as fluconazole against *Candida glabrata*. Aqueous extract also exhibited 4 fold stronger activity against *Candida krusei* (MIC- 4 µg/ml) and 4 fold (MIC; 2 µg/ml) against *Sacharomyces cerevisiae*. Chloroform and ethyl acetate extract showed lower activities against all fungal pathogens except for *Candida krusei*, compared with the standard. Against the filamentous fungus, *Trichosporon cutaneum*, all extracts showed less activity than the standard.<sup>6</sup>

**Larvicidal Activity:**

**R. Kaushik et al** (2008) was studied *Millingtonia hortensis* L. (Family: Bignoniaceae) a plant commonly known as 'Akas neem' and also as the "Indian cork tree" was first



reported which reveals the mosquito larvicidal property of *M. hortensis*.<sup>7</sup>

**R. Kaushik et al** (2009) was Screened 11 plant species of local flora against the IV instar larvae of *Aedes aegypti* (Diptera: Culicidae). These selected plants are *Millingtonia hortensis*, *Annona squamosa*, *Bauhinia variegata*, *Plumeria alba*, *Psidium guajava*, *Syzygium cumini*, *Alstonia scholaris*, *Michelea champaca*, *Holoptelia integrifolia*, *Quisqualis indica* and *Nerium indicum*.<sup>11</sup>

#### Antimicrobial Activity:

**A. Jetty; et al** (2000) was described the Polar extracts of the leaves of *Millingtonia hortensis* showed good antimicrobial activity. Twenty different bacterial strains and two yeast cultures were used. The aqueous alcohol extract showed good activity against all microbes tested, particularly *Escherichia coli* and *Salmonella typhimurium*, both Gram-negative bacteria, with MIC values of 6.25 µg/ml. The activity is compared with known antibiotics such as gentamycin and nystatin.<sup>8</sup>

#### Mutagenicity and antimutagenicity:<sup>9</sup>

**Malyn Chulasiri et al** (2006) was studied the mutagenicity and antimutagenicity of hispidulin and hortensin, the flavonoids from *Millingtonia hortensis* L. (Bignoniaceae), were performed using the liquid preincubation method of the *Salmonella*/microsome test. At the highest dose tested, 100 µg/plate, both compounds showed no mutagenicity and no cytotoxicity toward *S. typhimurium* strains TA98 and TA100 either in the presence or absence of S9 mix. However, these substances were antimutagens toward 2-aminoanthracene, aflatoxin BI (in TA98), and dimethylnitrosamine (in TA100); but neither substance inhibited the direct mutagenic activity of 2-(2-furyl)-3-(5-nitro-2-furyl) acrylamide nor that of sodium azide in strains TA98 and TA100, respectively.

#### Antiproliferation activity:

**Siwapong Tansuwanwong et al** (2009) was described the *Millingtonia hortensis* is a medicinal plant widely used in many Asian countries. An aqueous crude extract of this plant has been shown the apoptosis induction on RKO colon cancer cells. However, its mechanism remains unknown. To learn more about this plant extract, we partially purified the crude extract using Sephadex LH-20 and three aqueous fractions were collected. Each fraction was investigated for cytotoxicity using MTT assay.<sup>10</sup>

#### Antioxidant activity:

**P. Leelapornpisid et al** was determined the antioxidant activity of volatile oils and absolutes from 19 Thai aromatic plants in 12 families by scavenging effect on 1,1-diphenyl-2-picrylhydrazyl radical (DPPH<sup>•</sup>).<sup>12</sup>

#### CONCLUSION

*Millingtonia hortensis* Linn favorite garden tree. It is also called the Cork Tree. It is a perennial herb. This review

finned the description of the herb, the different types of pharmacologically actions like Antioxidant, larvicidal, Anti proliferate action, Antimicrobial action, and antifungal activities. This review article finned the things more useful for research scholars for during the studies.

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