

Curry leaf (*murraya koenigii*) and all about that plant



**ASSIGN
BUSTER**

CURRY LEAF (*Murraya Koenigii*)

Rutaceae

The most common names of curry leaves are Kalasakh, Kaidaryah (Sanskrit), Mithinim (Hindi), Barsunga (Bengali), Karuveppu (Malyalam), (Tamil) Kariveppilai, Karuveppu (Kanadda), Karivepaku (Telugu), Bishahari (Assam).

Distribution

Today curry leaves are cultivated in India, Sri Lanka, Southeast Asia, Australia, the Pacific Islands and in Africa as a food flavouring (Singh et al., 2014).

Botany

Curry leaves is a small aromatic tree with dark grey bark and closely crowded spreading dark green foliage. Leaves are imparipinnate and alternate. Leaflets are alternate, obliquely ovate or somewhat rhomboid, gland dotted and strongly aromatic. Flowers are white, arranged in much branched terminal corymbose cymes and fragrant. Fruits are subglobose or ellipsoid berries, purplish black when ripe and 2-seeded (Warrier et al., 1995).

Bioactive Components

All parts of curry leaves contain bioactive components; especially leaves contain proteins, carbohydrate, fiber, minerals, carotene, nicotinic acid, Vitamin C, Vitamin A, calcium and oxalic acid. Leaves of *Murraya koenigii* also contain crystalline glycosides, carbazole alkaloids, koenigin, girinimbin, iso-
<https://assignbuster.com/curry-leaf-murraya-koenigii-and-all-about-that-plant/>

mahanimbin, koenine, koenidine and koenimbine. Triterpenoid alkaloids cyclomahanimbine, tetrahydromahanimbine are also present in the leaves. Murrayastine, murrayaline, pyrayafoline carbazole alkaloids and many other chemicals have been isolated from *Murraya* leaves. Bark contains carbazole alkaloids like murrayacine, murrayazolidine, murrayazoline, mahanimbine, girinimbine, koenioline and xynthyletin (Bhandari 2012).

Health Benefits

The roots, bark and leaves of curry leaves are having various health benefits mainly appetising, carminative, antiinflammatory, antibacterial and antiseptic property. Its leaves are helpful for appetite and digestion. It is reported to be useful in emaciation, skin diseases, hemopathy, worm troubles, neurosis and poisons (Hussain et al., 1992). They are useful in vitiated conditions of kapha and pitta, hyperdipna, colic, flatulence, diarrhoea, dysentery, vomiting, inflammations and foul ulcers (Sivarajan et al., 1994).

Nutritional Value

The main nutrients found in curry leaves are carbohydrates, energy, fiber, calcium, phosphorous, iron, magnesium, copper, and minerals. It is rich source of various vitamins like nicotinic acid and vitamin C, vitamin A, vitamin B, vitamin E, antioxidants, plant sterols, amino acids, glycosides, and flavonoids. Also, nearly zero fat (0.1 g per 100 g) is found in them (Suman et al., 2014).

Mulethi (*Glycyrrhiza glabra*)

<https://assignbuster.com/curry-leaf-murraya-koenigii-and-all-about-that-plant/>

Leguminosa

The most common names for liquorice are Jeshthamadh (Marathi), Jothimadh (Hindi), Yashtimadhu, Madhuka (Sanskrit), Jashtimadhu, Jaishbomodhu (Bengali), Atimadhuram, Yashtimadhukam (Telugu), Jethimadhu (Gujarati) and Atimadhuram (Tamil) (Jyothsna et al., 2017).

Distribution

Mulethi is widely distributed in Mediterranean countries, South Europe, Asia Minor, Egypt, Turkistan, Iran, and in India, it is reported to be cultivated in Baramulla, Srinagar, Jammu, Dehradun, Delhi and South India. There are several well-marked species: *Glycyrrhiza glabra*, *glandulifera*, *echinata*, etc. Mulethi grows best on sandy soil near streams, usually not being found in the wild condition more than 50 yards from water.

Botany

Mulethi is a hardly herb or undershurb of pea family, found in subtropical and warm temperate regions. It is up to four or five feet, oval leaflets, leaves are multifoliate, imparipinnate. Flowers have axillary spikes, papilionaceous, and lavender to violet in colour; pods are compressed, containing reinform seeds having white to purplish in color. Flower form in clusters. It also have extensive root system with a main taproot and numerous runners. The main taproot, which is harvested for medicinal use, is soft, fibrous, and has a bright yellow interior.

Bioactive Components

<https://assignbuster.com/curry-leaf-murraya-koenigii-and-all-about-that-plant/>

A large number of components have been isolated from the Mulethi roots. 40-50 percent of total dry material weight of Mulethi is accounted by water-soluble, biologically active complex. The complex of Mulethi includes starches (30%), pectins, polysaccharides, simple sugars, gums, mucilage (Rhizome), amino acids, triterpene saponin, flavonoids, mineral salts, bitters, essential oil, fat, asparagines, female hormone estrogen, tannins, glycosides, protein, resins, sterols, volatile oils and various other substances are components of this complex (Bradley 1992; Hoffmann 1990). The primary active ingredient, Glycyrrhizin (glycyrrhizic acid; glycyrrhizinate) constitutes 10–25% of Mulethi root extract. Glycyrrhizin (a tribasic acid), can form a variety of salts. In Mulethi, it occurs naturally as calcium and potassium salts. The ammoniated salt of glycyrrhizin is manufactured from Mulethi extracts. The specifications for this salt form have been established in the Food Chemicals Codex. Cin. This salt is used as a food flavoring agent (Rahman & Sultana 2007; Wang et al., 2000). The yellow color of Mulethi is because of the flavonoid content of the plant. Flavonoids include liquiritin, a chalcone (isoliquiritin) and other compounds (Yamamura et al., 2007). Flavonoid rich fractions include liquirtin, isoliquertin, liquiritigenin and rhamnoliquiril. Many volatile components are present in roots e. g. geraniol, pentanol, hexanol, terpinen-4-ol, α -terpineol. Isolation of various compounds like propionic acid, benzoic acid, furfuraldehyde, 2, 3-butanediol, furfuryl formate, maltol, 1-methyl-2-formylpyrrole, trimethylpyrazine etc from the essential oil is also reported (Tamir 2001). The Indian variety of Mulethi roots show presence of Asparagine (Damle 2014).

Health Benefits

<https://assignbuster.com/curry-leaf-murraya-koenigii-and-all-about-that-plant/>

In traditional medicine, Mulethi has been recommended as a prophylactic agent for gastric and duodenal ulcers. It is employed in dyspepsia as an anti-inflammatory agent during allergenic reactions (Ammosov & Litvinenko 2003). It is used as a contraceptive, laxative, anti-asthmatic, emmenagogue, galactagogue, and antiviral agent in folk therapy (Saxena 2005). Mulethi roots are useful for treating cough because of its demulcent and expectorant property. It is also effective against anemia, gout, sore throat, tonsillitis, flatulence, sexual debility, hyperdyspsia, fever, skin diseases, and swellings. Mulethi is effectively used in acidity, leucorrhoea, bleeding, jaundice, hiccough, hoarseness, bronchitis, vitiated conditions of Vata dosha, gastralgia, diarrhea, fever with delirium and anuria (Sheth 2005; Kaur et al., 2013). It is a vital ingredient in medicinal oils used for the treatment of rheumatism, hemorrhagic diseases, epilepsy and paralysis (Kaur et al., 2013). Effectiveness of glycyrrhizin in the treatment of chronic hepatitis and liver cirrhosis is proved (Khare 2004). Mulethi is considered as one of the best remedies for relieving pain and other symptoms such as discomfort caused by acrid matter in the stomach. It alleviates the irritating effects of acids in a better way than alkalies (Chopra & Chopra 1958). It is an excellent tonic and is also used as demulcent in catarrh of the genitourinary passages (Nadkarni 1976).

Nutritional Value

Mulethi offers a wide range of beneficial nutrients and flavonoids. It is a good source of vitamin B1 (thiamine), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid) and vitamin E (tocopherol). It is reported that it also provides some

minerals such as phosphorous, calcium, choline, iron, magnesium, potassium, selenium, silicon and zinc (Joy et al., 1998).

Aloe (*Aloe vera*)

Liliaceae

The most common names of *Aloe vera* are Chinese Aloe, Indian Aloe, True Aloe, Barbados Aloe, Burn Aloe and First Aid Plant (Sahu et al., 2013).

Distribution

Although *Aloe vera* originated in the warm, dry climates of Africa, the plant is readily adaptable and occurs naturally worldwide.

Botany

Aloe ferox and *Aloe vera* belong to the family Liliaceae and the tribe Aloineae. Aloe are perennial succulents and are characterized by stemless large, thick, fleshy leaves that are lance shaped and have a sharp apex and a spiny margin. Aloe leaves have yellow latex, which is referred to as Aloe juice or sap and has a bitter taste. The leaf pulp is the innermost portion of the leaf and is composed of the parenchyma cells that contain the gel.

Bioactive Components

It is reported that plant contains flavonoids, terpenoids, lectins (Boudreau and Beland 2006; King et al., 1995; Eshun and He., 2004) fatty acids, cholesterol (Ni and Tizard 2004; Dagne et al., 2014) mono and polysaccharides (pectins, hemicelluloses, glucomannan and mannose

<https://assignbuster.com/curry-leaf-murraya-koenigii-and-all-about-that-plant/>

derivatives) (Femenia et al., 1999; Choi and Chung 2003), tannins, sterols (lupeol, campesterol, and β sitosterol), salicylic acid, organic acids, enzymes, saponins, vitamins, minerals (Newall et al., 1996), sapogenins and enzymes such as catalase, amylase, cellulase and alliinase (Steenkamp and Stewart 2007). Minerals such as calcium, magnesium, potassium, sodium, aluminum, iron and zinc are present. Amino acids such as arginine, asparagine, glutamic acid, aspartic acid and serine are also present (John et al., 1980). Vitamins such as B1, B2, B6, C, β -carotene, choline, folic acid, α -tocopherol are also present. Mannose 6 phosphate is a major sugar component in aloe vera (Joseph and Raj 2017).

Health Benefits

Gordon and David 2001 reported Aloe vera possess antiinflammatory, antioxidant and anticancer activity. It is also effective in treating various diseases such as stomach ailments, gastrointestinal problems, wound healing, burns, diarrhoea and in the treatment of skin diseases. Aloe vera are known for its astringent, haemostatic property. It is also reported for antidiabetic property (Yongchaiyudha 1996; Bunyapraphatsara 1996), anti-septic property (Hirat and Suga 1983), and antibacterial property (Rabe and Staden 1987). Currently the plant is widely used in skin care, cosmetics and as nutraceuticals.

Nutritional Value

Aloe vera offers a wide range of beneficial nutrients. It is a good source of 75 potentially active constituents: vitamins (vitamins A, C and E, vitamin B12, folic acid, and choline), enzymes (aliinase, alkaline phosphatase, amylase, <https://assignbuster.com/curry-leaf-murraya-koenigii-and-all-about-that-plant/>

bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase), minerals (calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc), sugars (glucose and fructose) and polysaccharides (glucomannans/polymannose), lignin, saponins, salicylic acids and amino acids (Surjushe et al., 2008).

BAEL (*Aegle marmelos*)

Rutaceae

The most common names of Bael are Koovalam (Malyalam), Sripthal (Hindi), Bilva (Sanskrit), Baela (Bengali), Marendu (Telugu), Bilvipthal (Gujarati) and Vilvam (Tamil).

Distribution

Bael tree is native to India and is found growing wild in Sub-Himalayan tracts from Jhelum eastwards to West Bengal, in central and south India. It is grown all over the country, especially in the premises of temples and houses.

Botany

The golden coloured bael fruit resembles a golden apple and hence the generic name *Aegle*. The specific name *marmelos* is derived from marmelosin contained in the fruit. *Aegle marmelos* is a medium sized armed deciduous tree growing upto 8m in height with straight sharp axillary thorns and yellowish brown shallowly furrowed corky bark (Nair, 1997). Leaves are alternate, trifoliate and aromatic. Flowers are greenish-white, sweet scented, borne on axillary panicles. Fruit is globose, woody berry with golden yellow

rind when ripe. Seeds are numerous oblong, compressed and embedded in the orange brown sweet gummy pulp.

Bioactive components

Bael is reported to contain a number of coumarins, alkaloids, sterols and essential oils. Fruits contain coumarins such as scoparone, scopoletin, umbelliferone, marmesin and skimmin. Fruits, in addition, contain xanthotoxol, imperatorin and alloimperatorin and alkaloids. Roots and stem barks contain a coumarin – aegelinol. Roots also contain psoralen, xanthotoxin, 6, 7-dimethoxy coumarin, tembamide, mermin and skimmianine. Leaves contain the alkaloids. Mermesinin, rutin and β -sitosterol and D-glucoside are also present in the leaves (Husain et al., 1992).

Health benefits

Bael possesses biological and pharmacological activity against various chronic diseases such as cancer and cardiovascular and gastrointestinal disorders. Bael also possess antioxidant, antiulcer, antidiabetic, anticancer, antihyperlipidaemic, anti inflammatory, antimicrobial property. Unripe fruit is stomachic and demulcent. Ripe fruit is known for its antigonorrhoeal, cardi tonic, restorative, laxative, antitubercular, antidysenteric and antiscorbutic property. Seed is anthelmintic and antimicrobial activity (Mujeeb et al., 2014).

Nutritional Value

Bael offers a wide range of beneficial nutrients. Lakht-e-Zehra reported that

Bael is a good source of vitamin C (73. 2 mg%), B1 (0. 16mg%), B2 (0. 18mg
<https://assignbuster.com/curry-leaf-murraya-koenigii-and-all-about-that-plant/>

%) and B3 (0.87mg%), amino acids (Leucine and aspartic acid) are also prominent in leaves, seeds and fruit pulp of bael.

Summary

Herbs and their extracts have long been used for curing health related components and metabolic disorders as natural remedies. Functional components present in them aids in performing a wide range of biological functionalities. A considerable portion's functional food market consists of herbal supplemented functional foods. Research should be focused in development of food products enriched with medicinal plant. Scientific community must apply modern techniques to assure the efficacy and safety of herbs and their bioactive components for their use in food formulations.