

MURRAYA KOENIGII L. (SPRENGEL): MEDICINAL AND NUTRITIONAL BENEFITS

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ABSTRACT

*In traditional medicinal therapies, several plant extracts and phytochemicals have been reported to impart remedial effects as better alternatives. *Murraya koenigii* L. (Sprengel) commonly known as Curry leaves or Meetha Neem is commonly used as a medicinally important herb of India. Previous reports have demonstrated that leaves, roots, fruits, flowers and bark of this plant are rich sources of carbazole alkaloids, which produce potent biological activities and pharmacological effects. These include antioxidant, antidiabetic, anti-inflammatory, antitumor and neuroprotective activities. Its leaves are extensively used in India for culinary and medicinal purposes. The plant has small green leaves with a unique flavour and aroma. 100 grams of curry leaves provide around 108 calories of energy. They are rich in carbohydrates, proteins, fibre, calcium, phosphorus, iron and other minerals. They also contain vitamin A, vitamin B, vitamin C, vitamin E etc. The leaves are used traditionally as spice. The aim of this review paper is to spread awareness about the benefits of this plant among tribal as well as urban people.*

INTRODUCTION

India is frequently known by enormous biodiversity of medicinal plants. Among them *Murraya koenigii* L. (Sprengel) has lots of bioactive molecules due to which this plant has been proven as medicinally important. *Murraya koenigii*, commonly known as Curry leaves in Indian dialects, is a tropical to subtropical tree belonging to family Rutaceae and is native to the Indian subcontinent. Commercial plantations have been established in India, and more recently in Australia. It grows best in well drained soils in areas with full Sun or partial shade. The plant is also called Meetha Neem though it is in a different family to Neem (*Azadirachta indica*) which is related to family Meliaceae.

Murraya koenigii is a small tree, growing 4-6 metre tall, with a trunk up to 40 cm in diameter. The aromatic leaves are pinnate, with 11-21 leaflets, each leaflet is 2-4 cm broad. The plant produces small white flowers which can self-pollinate to produce small shiny black drupes containing a single, large viable seed. The berry pulp is edible, with a sweet flavour. Different parts of this plant, such as leaves, root, bark, flowers and fruits are used. The fresh leaves are an indispensable part of Indian cuisine and Indian traditional medicines. For centuries this plant has been used in diverse forms and holds a place of pride in Indian Ayurvedic medicines, known as as “*Krishnanimba*”. There are three types of curry leaf trees: regular, dwarf and gamthi. The regular type grows fastened is tall. The leaves from this plant are commonly sold in grocery stores.



A wide range of phytochemicals have been isolated from the leaves, root and stem bark of *M. koenigii*. Extract of its leaves, root and stem bark have yield alkaloids, flavonoids, terpenoids and polyphenols. The plant leaves contain a substantial amount of proximate composition; the moisture is 63.2%, protein is 8.8%, carbohydrates is 39.4%, fat 6.15%, starch 14.6%, and crude fibre is 6.8%. The leaves have been reported as significant sources of several vitamins, such as vitamin A, B2, B3 and C, oxalic acid, calcium, magnesium and sodium. It also contains crystalline glycosides, carbazole alkaloids and koenimbine.

Bark contains carbazole alkaloids like murrayacine, murrayazolidine, murrayazoline, mahanimbine, Girinimbine koenioline and xanthyletin. The pulp of fruits generally contains 64.9% moisture, 9.76% total sugar, 9.58% reducing sugar and very little amount of tannin and acids. The pulp of fruits also contains protein, phosphorus, potassium, calcium,

magnesium, and iron. Among the green leafy vegetables, the total antioxidant activity was the highest in the *Murraya koenigii*.



MEDICINAL AND NUTRITIONAL USES –

Essential oils and fresh leaf powder of *Murraya koenigii* are useful in seasoning food items and preparing ready to eat foods. Owing to the higher antimicrobial activities of the essential oil from leaf extract can also be used as perfume and flavour agents in traditional practice. Fresh curry leaves are boiled with a coconut oil mixture until they are reduced to a black residue to produce an excellent hair tonic and improving hair growth. Curry leaves have a traditional use, as antidiarrheal, antifungal, blood purifying, anti-inflammatory and anti-depressant agents. Different parts of the plant, such as leaves, roots and bark can be prepared as tonics for inducing digestion and as antiemetics. After decoction, the leaves are helpful in reducing fever. The juice of root is given in renal pains. The leaves and roots can be given as an anthelmintic, analgesic, cure for piles and helpful in reducing inflammation and itching. They are also useful in leukoderma and blood disorder. When eaten raw, the green leaves are very beneficial for dysentery and when they are boiled in milk, the paste is used for curing poisonous bites and eruptions. The roots are purgative to some extent. They are stimulating and used for common body aches. The leaves of this plant can be used in weight loss. Carbazole alkaloids work against weight gain and help in regulating cholesterol levels in the body. To increase their consumption, we can add fresh or dried curry leaves to our meals and salad.

The fresh or dried leaves of *Murraya koenigii* are also very beneficial in morning sickness and nausea of pregnant women. Most illness are caused by infection or because of oxidative damage in the body. Curry leaves can be used as an alternative and natural treatment for such infections because they contain carbazole alkaloids, linolol. Linolol has bacteria killing properties and also helps in eliminating harmful free radicals from our body.

The main nutrients found in curry leaves are carbohydrates, energy, fibre phosphorus, magnesium, copper and minerals. They are rich in vitamin A, B, C and B₂. Curry leaves are also said to be good source of iron and calcium. They also contain vitamins like nicotinic acid, antioxidants, amino acids and flavonoids.

Murraya koenigii's essential oil inhibited xanthinoxidase activity, which caused decrease of the generation of superoxide radicals. Moreover, there is a second mechanism of action involved, the scavenging of superoxide radicals. The oil has a maximum zone of inhibition ability against *Corynebacterium tuberculosis*, *Pseudomonas aeruginosa*, *Streptococcus pyogenes*, *Klebsiella pneumonia* and *Enterobacter aerogenes*.

Curry leaves for skin

Application of curry leaves help in treating bruises and burns as well as rashes and insect bites. The high content of antioxidants and vitamin C also helps to keep the skin young.

Curry leaves for liver

Eating curry leaves can keep your liver healthy. They are beneficial in liver conditions such as cirrhosis. Curry leaves also protect the liver from various infections.

Curry leaves for hair

Curry leaves are excellent for source of nutrients for hair growth. Regular consumption of curry leaves strengthens hair, cures dandruff and prevents premature greying of hair.

Curry leaves for eyes

Curry leaves are useful in eye problems such as cataract. Rich in vitamin A; curry leaves protect the eyes, keep the retina healthy and prevent the vision loss.

Curry leaves for anaemia

Curry leaves are excellent source of iron and its consumption can help people who suffer from anaemia. Another benefit of curry leaves is that they are a good source of folic acid, which aids the body in absorbing iron. Without adequate folic acid in the body, the iron is excreted from the body without proper absorption.

Curry leaves for heart

Curry leaves help lower the levels of bad cholesterol in the body. Curry leaves aid in weight loss, which removes extra pressure from the heart. The antioxidants present in curry leaves are beneficial in keeping the heart healthy.

Curry leaves for digestion

Health benefits of curry leaves for good digestion along with their aromatic flavour are the reasons for the popularity of curry leaves usage in food.

CONCLUSION

Murraya koenigii L. (Sprengel) commonly known as Curry leaves or Meetha Neem is commonly used as a medicinally important herb of India. The leaves, Roots and bark of this plant are rich sources of carbazole alkaloids, which produce potent biological activities and pharmacological effects. Curry leaves are the shiny, dark green, aromatic leaves of a tree from the citrus fruit family that release a deliciously nutty aroma when fried in hot oil. Curry leaves are often seen decorating the plates of South Indian households. 100 grams of curry leaves provide around 108 calories of energy. The leaves are used traditionally as a spice. Curry leaves have a traditional use, as anti-diarrheal, antifungal, blood purifying, anti-inflammatory and anti-depressant agents. Different parts of the plant, such as leaves, roots and bark can be prepared as tonics or inducing digestion and as antiemetic. After decoction, the leaves are helpful in reducing fever. Among the green leafy vegetables, the total antioxidant activity was the highest in the *Murraya koenigii*. The main nutrients found in curry leaves are carbohydrates, energy, fibre, phosphorus, magnesium, copper and minerals. They are rich in vitamin A, B, C and B₂. Curry leaves are also said to be a good source of iron and calcium. They also contain vitamins like nicotinic acid, anti-oxidants, amino acids and flavonoids. The *Murraya koenigii* oil has a maximum zone of inhibition ability against *Corynebacterium tuberculosis*, *Pseudomonas aeruginosa*, *Streptococcus pyogenes*, *Klebsiella pneumonia* and *Enterobacter aerogenes*.

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