



**A REVIEW ON CURRY LEAVES (*Murraya koenigii*): CHARACTERISTICS AND
MEDICINAL USES**

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ABSTRACT

The leaves usually go by the name "curry leaves", though they are also called "sweet neem leaves." It is a vital content of curries in South India, where without curry leaves, curry seems to be tasteless. The Kannada name means "black neem", since the appearance of the leaves is similar to the distinct bitter neem tree. Curry leaf is a very precious product of cosmetic industries, medicinal purposes and for flavour in food. So, the farming of Curry leaves plants is very indispensable in the view point of wellbeing of industries as well as farmers. The aromatic leaves of this plant are used to flavor many Indian dishes much like bay leaves, especially in curries with fish or coconut milk. The innovative Indian word "Kari" refers to the sauce of these piquant dishes, hence the name curry leaf. Curry leaves are extensively used in industries for its best medicinal quality as an anti-diabetic, antioxidant, antimicrobial, anti-inflammatory, hepatoprotective, anti-hypercholesterolemic etc. and preparing cosmetics and also for flavor in eatable, so there is need to grow more and more curry leaves. In addition this, farmers can also improves their financial status. The aim of the present study is to provide information about origin, history, morphological characters, Plant description and habitat, Nutrients, Therapeutic uses of *Murraya koenigii* (Curry Leaves).

Keywords: *Murraya koenigii* , Phytochemistry, Biological activity, Rutaceae, Medicine, antibacterial, antioxidant, Therapeutic

INTRODUCTION:

Murraya koenigii is a small spreading shrub that belongs to the family Rutaceae. It is commonly found in Himachal Pradesh and deciduous forest of the Indian and Malaysian peninsular (Ajay *et al*, 2011). Different parts of the plant have been employed traditionally for treating numerous diseases. For example, the roots, bark and leaves of the plant have been used to treat digestive problems. The curry leaf acts as a blood purifier, depressant and anti-inflammatory. It is also used for treating body aches, kidney pain and vomiting (Nutan, Rana *et al* 1998, 2004). The curry leaves can also be applied as poultice for treating bruises and eruption, and for increasing digestive secretions etc. (V.S.Kumar and R. Chokchaisiri, 1999, 2009). Curry plants have been used as medicines for thousands of years all over the world. According to WHO (World Health Organization), 80% of the population, mostly in developing countries still rely on plant-based medicines for their primary health care. In India, the different systems of medicinal usage like Ayurveda, Siddha, Unani, Amchi and local health traditions, focuses on the use of plant products for the treatment of human and animal diseases. For a couple of days back, medicinally plants have been used as traditional medicines in

developing countries are including India, Thailand, China, Germany. The plant is a natural source present throughout the world, (Handral *et al.*, 2012). The World Health Organization (WHO) estimated that 80% of the community depends on natural medicine, which is clearly exemplified by the 19.4 billion Dollar global earning for an herbal cure (Ujowundu *et al.*, 2010). Nowadays, demand for natural plant medicine is very high. For example, the demand for medicinal herbal plants is increasing at 20% of the annual rate in India. Like these, 30% to 50% in China of the entire consumption of medicinal is from herbal medicine (Kang *et al.*, 2018).

Murraya koenigii, commonly known as curry leaf or kari patta in Indian dialects, belonging to Family Rutaceae which represent more than 150 genera and 1600 species (Satyvati *et al*, 1997). Curry leaf is widely used as a spice and condiment in India and other tropical countries. The leaves have a slightly pungent, bitter and feebly acidic taste, and they retain their flavour and other qualities even after drying. A scrutiny of literature reveals some notable pharmacological activities of the plant such as activity on heart, Anti diabetic and cholesterol reducing property, antimicrobial activity, antiulcer

activity, antioxidative property, cytotoxic activity, anti diarrhea activity, phagocytic activity.

Various parts of *Murraya koenigii* have been used in traditional or folk medicine for the treatment of rheumatism, traumatic injury and snake bite (Keasri *et al*, 2007). The *Murraya* species has richest source of carbazole alkaloids. Further, Carbazole alkaloids have been reported for their various pharmacological activities such as anticonvulsant, antitumor, anti-inflammatory, diuretic, anti-viral and activities (Knolker *et al*, 2008). The leaves of the plants are full of antioxidants, namely, tocopherol, β -carotene, and lutein, and possess antioxidative and anti-lipid peroxidative activities, providing protection against oxidative stress (Mitra *et al*, 2012).

History of Curry Leaves:

The early seen of *Murraya koenigii* in first to fourth century AD. It was curry in Kannada and Tamil literature. Curry leaves originated

from kari word of Tamil, which meaning is 'spiced sauce' and now as *Murraya koenigii* (Parrota JA, 2001). Utilization of *Murraya koenigii* as the enhancing specialist in various dishes and vegetables in early writing of Tamil and Kannada (Prajapati *et al*, 2003). It has been grown and developed in numerous district of India and furthermore in Sri Lanka, South east Asia, Australia, Africa and Pacific Islands as flavouring agent for various food (Bonde *et al*, 2007).

Origins

Curry leaf trees are naturalised in forests and waste land throughout the Indian subcontinent except in the higher parts of the Himalayas. From the Ravi River in Pakistan its distribution extends eastwards towards Assam in India and Chittagong in Bangladesh, and southwards to Tamil Nadu in India. Curry plants were spread to Malaysia, South Africa and Reunion Island with South Asian immigrants (Singh *et al*, 2014).



Hyderabad, Telengana Region



Kamrup, Assam Region



Hisar, Haryana Region



Rudraprayag, Uttarakhand Region

Plant description and habitat

Tree is a semi-deciduous, unarmed aromatic small spreading shrub or tree as strong woody stem, stem which is dark green to brownish in colour. The tree is 4.2–8.6 m (14–31 feet) tall, with a trunk up to 81.2 cm diameter. Curry plant is distributed and cultivated throughout India. It is found wild from Himalaya's, Uttarakhand, Sikkim to Garhwal, Bengal, Assam, Western Ghats and Travancore- Cochin. Propagation is done by seeds, which germinate freely under partial shade. It also available in other part of Asian region like in moist forests of 500- 1600 m height in Guangdong, S Hainan, S Yunnan (Xishuangbanna), Bhutan, Laos, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam murraya Together with South Indian immigrants, curry leaves reached Malaysia, South Africa and Réunionisland. Outside the

Indian sphere of influence, curry plants are rarely found. *Murraya koenigii* is an unarmed, semi deciduous aromatic shrub or small tree with slender but strong woody stem and branches covered with dark grey bark, leaves are imparipinnate, glabrous and very strongly aromatic. Leaflets 9-25 or more, short stalked, alternate, gland dotted and *koenigii* is an aromatic and more or less deciduous shrub or small tree upto 7 meters in height and 14 to 42 cm in diameter. The main stem of curry leaf is dark green to brownish. The bark of the stem can be peeled off longitudinally which exposes the white wood underneath. The diameter of the main stem is approximate 16-17 cm. Stem and Bark are Brown to dark green, the main stem is 16 cm up to 6 meters in height and 15 to 40 cm in diameter. The stem has dots on the bark like small node. Curry leaves are

Aromatic in nature. Flowers are small, white fragrant ebracteate, calyx deeply five cleft, pubescent. Petals five, free, whitish, glabrous and with dotted glands. Fruits occur in close clusters, small ovoid or subglobose, glandular, thin pericarp enclosing one or two seeds having spinach green color.

Morphological Characters

The *M. koenigii* is having grey color bark, longitudinal striations on it and beneath it white bark is present. Leaves are bipinnately compound, 15-30 cm long each bearing 11-25 leaflets alternate on rachis, 2.5-3.5 cm long ovate lanceolate with an oblique base. Margins irregularly crenate, petioles 2-3 mm long, flowers are bisexual, white, funnel shaped sweetly scented, stalked, complete, ebracteate, regular with average diameter of fully opened flower being in average 1.12 cm inflorescence, terminal cymes each bearing 60-90 flowers (Prajapati *et al.*, 2003). Fruits, round to oblong, 1.4 to 1.6 cm long, 1 to 1.2 cm in diameter; weight, 880 mg; volume, 895 microlitres, fully ripe fruits, black with a very shining surface, the number of fruits per cluster varying from 32 to 80. Seed, one in each fruit, 11 mm long, 8 mm in diameter, colour spinach green (Bonde *et al.*, 2007).

Nutrients of Curry Leaves

Curry Leaves are packed with a multitude of nutrients like carbohydrate, fiber, calcium, phosphorous, iron, magnesium, zinc, multi vitamins and flavonoids, curry leaves are an arcade of health benefits. It is extensively used in the treatment of anemia, diabetes, indigestion, obesity, kidney problems, hair and skin problems.

1. **High on Fiber:** Curry leaves are an excess source of fiber. It makes better our digestive health and regular bowel movements. It is useful in treating diarrhea and nausea and also controls the blood glucose levels in our body.

2. **Loaded with Proteins:** Curry leaves have a high concentration of proteins which are considered to be the building blocks of the body. It is essential for the proper growth and development of the body and strengthens our immune system.

3. **Powerhouse of Calcium:** Calcium is broadly known for its importance in improving bone health in our body. Being a power house of calcium, curry leaves are excellent for strengthening the teeth and bones and preventing diseases like osteoporosis and osteomalacia.

4. **Rich in Phosphorus:** Being one of the most important nutrients in curry leaves, phosphorus helps in cleansing our kidneys. It preserves normal heart beat, lessen painful

muscle spasm after exercise and also strengthens the teeth and bones. At the cellular level, phosphorus is used for the growth and repair of cells and tissues of body.

5. Abundance of Essential Oils: Apart from the minerals and vitamins, curry leaves are a source of power to a number of volatile essential oils like α -pinene, sabinene, β -pinene, α -terpinene etc. These essential oils acquire anti-inflammatory, anti-bacterial, anti-diabetic, anti-dysenteric, carminative and digestive properties which are particularly beneficial for our hair, skin and oral health. It is also effective against hyperglycemia, high cholesterol and aids in digestion system.

Therapeutic uses of Curry Leaves

1. Treats Diabetes: The hypoglycemic property of the curry leaves play a significant role in alleviating the blood sugar level of the body. The production of insulin from the pancreatic β -cells becomes active on consumption of curry leaves. Curry leaf helps in reducing the breakdown of starch into glucose which in turn leads to low blood glucose level.

2. Prevents Anemia: The deficiency of iron in our body causes anemia. Curry leaves having a high concentration of iron is extremely effective in increasing the

hemoglobin and red blood cell count of the blood. It acts as a natural blood purifier, improves symptoms of tiredness and fatigue and reduces chances of getting infections of body.

3. Good for Vision: Curry leaves being abundant in Vitamin A and β -carotene play a vital role in improving our eye sight and treating eye related problems. It prevents the cornea from drying up and cloud formation in front of the eyes, thus reducing the chances of Xerophthalmia and night blindness.

4. Fights Infections: The curry leaves have potent anti-bacterial, anti-fungal, anti-inflammatory and antioxidant properties. So we should regular use curry leaves shields our body against various infections and germs.

5. Boon for Weight Loss: Curry leaves are considered as a boon by people for a weight loss management program. The presence of carbazole alkaloids in the leaves prevents weight gain and reduces the LDL cholesterol (i.e. bad cholesterol) in the blood. It washes out the harmful toxins from the body and burn excess fat of our body.

6. Aids in Digestion: The high content of fiber in the leaves has proven to be beneficial in treating several gastro intestinal troubles. The carminative, digestive, antiemetic and anti-dysenteric properties of curry leaves not

only aid in digestion but also prevent constipation, diarrhea, dysentery, piles, nausea, bloating etc. Being a natural stimulant, curry leaf enhances the appetite.

7. Prevents Cancer: Recent researches suggest that the presence of phenols and carbazole alkaloids are extremely effective in treating and preventing prostate and colorectal cancers of body.

8. Dental Care: Curry leaves having anti-bacterial and anti-microbial properties are extremely effective in maintaining good oral health. The essential oil present in the leaves strengthens the gum and teeth, removes bad odor and protects the teeth and gum from any foreign microbes and infections.

CONCLUSION:

Curry Leaf (*Murraya koenigii*) is a medicinal as well as culinary plant that belongs to family Rutaceae. Numerous pharmacological activities of the plant has been seen such as activity on Cholesterol reducing property, Anti diabetic, antimicrobial activity, anti-diarrhoea activity, antioxidative property, antiulcer activity, cytotoxic activity, anti-cancer activity with many other phagocytic activity. The chemical constituents of this plant consisted of essential oil alkaloids and terpenoid. *Murraya koenigii* leaves virtues supplementary phytochemical, pharmacological and clinical

investigations for development of an effective natural plant. Carbazole alkaloids and triterpene have been isolated from stem bark and roots of *Murraya koenigii*. The plant is used in various pharmacological activities such as activity on antioxidative property, Anti diabetic and cholesterol reducing property, antimicrobial activity, antiulcer activity, cytotoxic activity, anti diarrhea activity, phagocytic activity. Although crude extract from various parts of *Murraya koenigii* have numerous medical applications, modern drugs can be developed after extensive investigation of its bioactivity, mechanism of action, pharmacotherapeutics, toxicity and after proper standardization and clinical trials. The available literature and wide spread availability of *Murraya koenigii* in India thus makes it an attractive candidate for further pre-clinical and clinical research.

REFERENCE

- [1] Bonde SD, Nemade LS, Patel MR, et al. (2007) *Murraya koenigii* (Curry leaf): Ethnobotany, phytochemistry and pharmacology - a review. International Journal of Pharmaceutical and Phytopharmacological Research.; 4(5): 45–54.
- [2] Prajapati ND, Purohit SS, Sharma AK, Kumar T. (2003) A Handbook of

- Medicinal Plants. Jodhpur: Agrobios,: 352-353.
- [3] Sunita Verma (2018) A study on a highly medicinal plant *Murraya koenigii* : Rutaceae The Pharma Innovation Journal; 7(7): 283-285, ISSN (E): 2277- 7695 ISSN (P): 2349-8242.
- [4] Amit Chaudhary A Review on the Culinary Uses and Therapeutic Properties of *Murraya koenigii*, Journal of Advancement in Pharmacognosy Volume 1 Issue 1, CR Journals (Page 1–8) 2020.
- [5] An update on *Murraya koenigii* S: a multifunctional Ayurvedic herb. Journal of Chinese integrative medicine. 2012; 9(8):824- 833.
- [6] Raghunathan K, Mitra R, Pharmacognosy of Indigenous Drugs, Central Council for Research in Ayurveda and Siddha, New Delhi, Vol. I: 433.
- [7] Satish Chand Saini and Dr. Gopu Bala Show Reddy A Review on Curry Leaves (*Murraya koenigii*): Versatile Multi-Potential Medicinal Plant
- [8] S. Ajay, S. Rahul, G. Sumit, M. Paras, A. Mishra, A. Gaurav, Comprehensive review: *Murraya koenigii* Linn, Asian J Pharm Life Sci. 2231 (2011) 417–425.
- [9] M.T.H. Nutan, A. Hasnat, M.A. Rashid, Antibacterial and cytotoxic activities of *Murraya koenigii*, Fitoterapia 69 (1998) 173–175.
- [10] V.S. Rana, J.P. Juyal, M.A. Blazquez, Chemical constituents of the volatile oil of *Murraya koenigii* leaves, Int J Aromather. 14 (2004) 23–25.
- [11] V.S. Kumar, A. Sharma, R. Tiwari, S. Kumar, *Murraya koenigii*: a review, J of Med Aromat Plant Sci 21 (1999) 1139–1144.
- [12] R. Chokchaisiri, C. Suaisom, S. Sriphota, A. Chindaduang, T. Chuprajob, A. Suksamrarn, Tropical & subtropical trees. A worldwide encyclopaedic guide tropical & subtropical trees. A worldwide encyclopaedic guide 7, 2004, Chem.
- [13] Satyavati GV, Gupta AK, Tendon N. Medicinal Plants of India, Indian council of medical research, New Delhi India. 1987; 2:289-299.
- [14] Keasri AN, Kesari S, Singh SK, Gupta RK, Watal G. Studies on the glycemic and lipidemic effect of *Murraya koenigii* in experimental

-
- animals. *J Ethnopharmacol.* 2007; 112:305-311.
- [15] Knolker HJ, Reddy KR. 2008. Biological and pharmacological activities of carbazole alkaloids. *The Alkaloids.* 65: 181-193.
- [16] Mitra E, Ghosh AK, Ghosh D, Mukherjee D, Chattopadhyay A, Dutta S *et al.* Protective effect of aqueous Curry leaf (*Murraya koenigii*) extract against cadmium-induced oxidative stress in rat heart. *Food Chem Toxicol.* 2012; 50:1340-53.
- [17] Singh S, Omreb PK, Mohan SM. Curry leaves (*Murraya koenigii* Linn. Sprengal)-A Mircale plant. *Indian J Sci. Res.* 2014; 4(1):46-52.