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A Review On Curry Leaves

"A Comprehensive Review on Botanical, Phytochemical and Pharmacological Properties of Murraya koenigii"

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ABSTRACT :-

This review provides updated insights into the pharmacognostical, phytochemical, and pharmacological aspects of Murraya koenigii (curry leaf), a tropical aromatic plant native to India. It is widely used in cooking and recognized for its medicinal and industrial value. The study identifies phytochemicals in curry leaf powder extracted using methanol, ethanol, and aqueous solvents, revealing alkaloids, flavonoids, glycosides, steroids, tannins, and terpenoids. Belonging to the Rutaceae family, it holds great significance in Ayurveda. Rich in carbazole alkaloids,Murraya koenigii exhibits diverse pharmacological and biological properties.[1]

KEYWORDS :- Murraya Koenigii, History, Pharmacological Activity, Toxonomy etc.

INTRODUCTION:-

Murraya koenigii, commonly known as curry leaf, belongs to the Rutaceae family, which includes about 150 genera and 1600 species.This aromatic herb is native to South Asia, especially Bangladesh, India, and Sri Lanka.Historical records trace its use back to the 1st–4th century AD for tonic and digestive purposes.It is known by various names, such as Karuveppilai (Tamil), Mitha Neem, and Surabhinimba (Sanskrit).The plant's compound leaves serve both culinary and ornamental purposes.Medicinally, curry leaves help treat edema, bruises, piles, diarrhea, inflammation, and itching.[2]

Its bark is traditionally used in treating snakebites, while the essential oil shows hepatoprotective and antioxidant properties.There are three main varieties: standard (dark-green, fast-growing), dwarf (bushy, light-green), and brown (dense, aromatic).In India, curry leaves—called Kadhi Patta or Giri Nimba—are prized for flavor and nutrition, containing vitamins and nicotinic acid.Their aroma comes from compounds like P-gurjunene, P-caryophyllene, P-elemene, and O-phellandrene, which also act as natural preservatives.[3]

HISTORY :- Curry leaves (Murraya koenigii) have been known since the 1st–4th centuries AD. The term "Kari," meaning "spiced sauce" in Tamil, appears in early Tamil and Kannada literature, referring to its use in flavoring vegetables. Today, Murraya koenigii is widely cultivated in India, Sri Lanka, the Pacific Islands, and Africa for its culinary value.[4]

Plant Description :- Murraya koenigii (curry leaf) is widely distributed across India, from the Himalayas to the Western Ghats and Assam, thriving in humid forests at elevations of 500–1600 m. It grows as a fragrant, semi-deciduous shrub or small tree, reaching 6–15 ft tall with woody stems and aromatic, imparipinnate leaves. Native to India and Sri Lanka, it spread to Malaysia and South Africa through migration. Its leaves are key in Indian and Asian cuisines, and the essential oil is used in foods like ice cream, candies, and soft drinks. The plant bears small white flowers and blackish fruits in dense clusters. [5]

Morphological Characteristic :- Curry Leave is a small,spreading bush about 2.5 m tall with a 16 cm thick stem and peelable bark revealing white wood. Its compound leaves are 35 cm long with 25 lance-shaped leaflets. Flowers are white, fragrant, and about 1.15 cm wide, with 10 stamens and a superior ovary. The fruits are oval to spherical, shiny black when mature, about 1.7–1.8 cm long, and occur in clusters of 30–80. Each fruit contains one green seed about 12 mm long and 9 mm wide.[6]

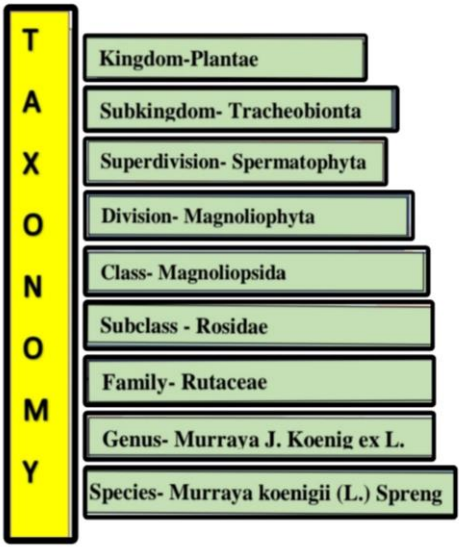

Fig No 1 : Taxonomy Of Murraya Koenigii

Traditional Use :- Murraya koenigii is widely used in South Asian cooking for its unique flavor and aroma. Traditionally, it serves as a natural remedy to boost appetite and aid digestion. The leaves treat rheumatism, wounds, burns, and animal bites. Cooked or dried leaves help prevent vomiting, while ground leaves act as a mild laxative. Mixed with lime and sugar, the leaf juice relieves morning sickness, and root juice eases kidney pain. The stem is used to clean teeth and strengthen gums.[7]

Geographical Distribution :- Curry Leave is widely distributed across India, especially in Sikkim, Garhwal, Bengal, Assam, the Western Ghats, and Travancore-Cochin. It grows well from seeds in light or partial shade and thrives in humid forests at elevations of 500–1600 m. The plant is also found in Nepal, Sri Lanka, Bhutan, Thailand, Laos, Vietnam, and parts of China such as Guangdong and Yunnan. Through South Indian migration, curry leaves spread to Malaysia, South Africa, and Reunion Island but remain most common in regions under Indian influence.[8]

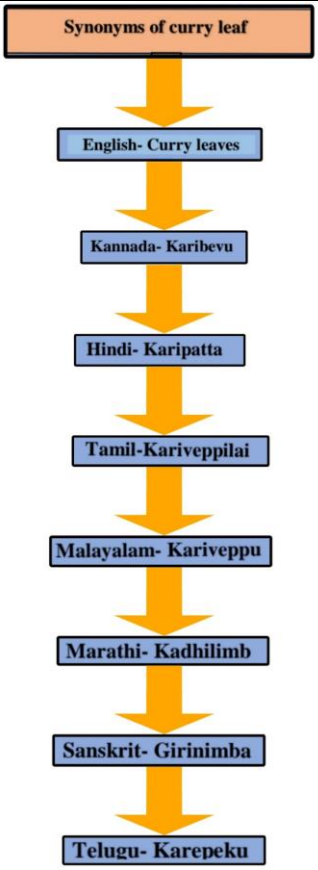

Fig No. 2 : Synonyms Of Murraya koenigii

Phytoconstituent's Of Plant :-

1) Leaf
2) Seed
3) Fruit
4) Root
5) Flower

Leaf :- Curry leaves contain key compounds such as koenimbine, mahanine, isomahanine, bismahanine, and glycozoline, along with nicotinic acid, proteins, carbohydrates, fiber, minerals, and carotene.[9]

Seed :- Murraya koenigii seeds contain main alkaloids like koenimbine, koenine, and kurryam, along with mahanimbine, girinimbine, and isomahanine. They also include furocoumarins such as xanthotoxin, byakangelicol, and bergapten, plus unique compounds like indicolactone and 2,3-epoxyindicolactone.[10]

Fruit :- Mahanimbine and koenimbine can be taken out from the fruit of Murrayakoenigii using petroleum ether. Along with in the mahanimbine, murrayazolidine, girinimbine and koenimbine, mahanine, isomahanine and murrayanol were are also found.

Root :- Curry leaf roots contain compounds like marmesin-1-O-rutinoside, murrayanol, murrayagetin, mukolidine, and girinimbine. The bark has carbazole alkaloids such as Murrastifoline F, bismahanine, bismurrayaquinone-A, and koenoline. [11]

Flower :- Curry leaf plants grow slowly as energy goes into flowering; remove buds unless saving seeds. Major compounds include linalool (32.83%), elemol (7.44%), and geranyl acetate (6.18%). [12]

Pharmacological Activity :

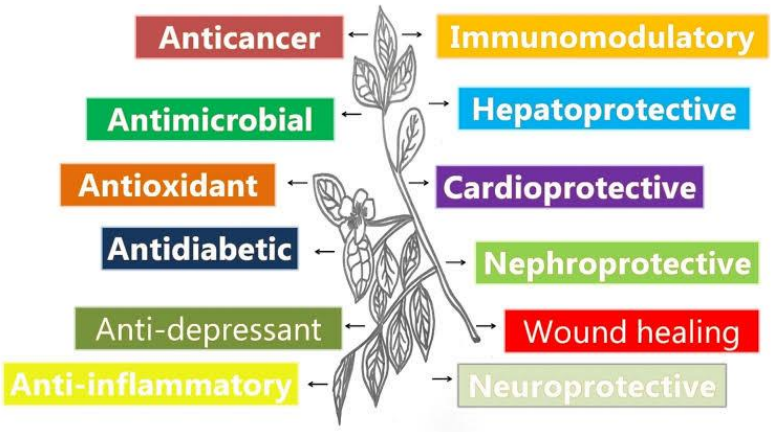

Fig No. 3: Pharmacological Activity In Curry Leave

1. Antimicrobial Activity: Curry leaf root extracts (hexane, methanol, chloroform) show antimicrobial activity, with methanol being most effective, especially against Staphylococcus aureus and Trichophyton rubrum. Water extract was ineffective .[13]

2. Anti-inflammatory Activity: Methanol and water extracts of curry leaf (400 mg/kg) reduce inflammation in male albino rats, with methanol extract being more effective.[14]

3. Antidiabetic Activity: Mahanimbine from Murraya koenigii lowers blood sugar in rats (50–100 mg/kg) by boosting insulin or glucose use and inhibiting alpha-amylase.[15]

4. Anticancer Activity: Girinimbine and mahanine from Murraya koenigii induce apoptosis in cancer cells, with mahanine identified as the main anticancer compound.[16]

5. Antioxidant Activity: Reactive oxygen species (ROS) like singlet oxygen and hydrogen peroxide cause oxidative stress, damaging lipids, proteins, and DNA, and contributing to diseases. Plant-derived antioxidants help protect against such damage.[17]

6. Hepatoprotective Activity: Curry leave water extract shows hepatoprotective effects in animals, protecting the liver from alcohol-induced damage and maintaining enzyme balance.[18]

7. Cytotoxic Activity: Murraya koenigii contains compounds like koenoline that inhibit cancer cell growth, showing potential as a natural anticancer source.[19]

8. Antihelmintics Activity: Curry leaf extracts (100 mg/ml) show strong antihelminthic activity against Pheretima posthuma, causing paralysis and death of the worms.[20]

Conclusions : Murraya koenigii in the useful plant that is used in the many traditional medicine systems all around the world. In this review, we tried to share information about its appearance, the chemicals it contains, and how it is used in traditional medicine. This plant has several health benefits, including fighting infections, reducing inflammation, helping control diabetes, killing cancer cells, protecting the liver, and getting rid of worms.

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