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A Review on the Pharmacognosy, Phytochemistry & Pharmacology of *Murraya Koenigii*

Ritesh Kumar[1], Dr. Abhishek Soni[2], Mr. Bhopesh Kumar[3], Dr. Chinu Kumari[4], Mr. Nishant Sharma[5]
Student, Department of Pharmacy[1]
M. Pharm, PhD in Pharmaceutics, Dean of Pharmacy[2]
M. Pharm in Pharmacognosy[3]
M. Pharm, PhD in Pharmacology, HOD of Pharm D[4]
M. Pharm in Pharmaceutics[5]
School of Pharmacy, Abhilashi University, Mandi, H.P., India
riteshnegi321@gmail.com[1], abhisoni.phd@gmail.com[2], bhopeshkumar3233@gmail.com[3],
Chinu990@gmail.com[4], nts539@gmail.com[5]

Abstract: *The purpose of this review is to provide up-to-date information on pharmacognostical, phytochemical, and pharmacological research of Murraya koenigii. Curry leaf is an aromatic tropical and subtropical plant that originated in India. Aside from its culinary uses, curry leaf is known for its medical and industrial purposes. To assess Murraya koenigii's varied and multipotential medicinal usage. The literature reveals that Murraya koenigii has a variety of activities, particularly in the leaf, stem, bark, and oil. Plant extracts and phytochemicals have proven to be effective alternatives in traditional medicine. Murraya koenigii (M. koenigii) is a member of the Rutaceae family and is widely recognized as a medicinally significant herb of Indian provenance in the Ayurvedic medical system. The "Magical plant of Indian Spice" (Murraya koenigii) has helped humanity not only as a food enhancer, but also as village or folk medicine to cure various ailments; tribal people have employed numerous portions of the Murraya koenigii to treat them.*

Keywords: *Murraya koenigii*.

I. INTRODUCTION

Curry leaf (*Murraya koenigii*) is part of the Rutaceae family, which has 150 genera and 1600 species [1]. It has been identified as native to South Asia, notably Bangladesh, India, and Sri Lanka [2]. *Murraya koenigii* was introduced in the first and fourth centuries AD. The entire plant is regarded to be tonic and stomachic, with historical usage [3]. In addition, Karuveppilai in Tamil, Mitha Neem in Hindi, and Surabhinimba in Sanskrit [4]. Curry leaf plants, with their compound leaves, can also be used as a hedge or decorative shrub [5]. The green leaves of M. koenigii are used to treat oedema, bruising, piles, diarrhoea, inflammation, itching, and fresh cuts. Somewhat purgative are the roots. They are energising and utilised for general body aches. Snake bites can be treated with the bark [6–9]. The leaves of these plants have a slightly bitter taste, and the fragrance is pungent and acidic [10]. They are primarily used to treat anthelmintics, analgesics, digestives, and appetizers [11]. Plant leaves can be used to treat piles, inflammation, itching, wounds, diarrhoea, bruising, and oedema. Plant roots have purgative properties. They are used to stimulate the body and relieve physical ailments. The bark is used to cure snake bites [12]. Essential oils isolated from M. koenigii leaves have antioxidant and hepatoprotective properties [13] antimicrobial, antifungal [14,15] anti-inflammatory, and nephroprotective activities
[16,17].

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Fig. 1: Plant of *M. koenigii*

1.1 History of Curry Leaves

Curry leaf trees are endemic to India, Sri Lanka, Bangladesh, and the Andaman Islands. Later disseminated by Indian migrants, they now thrive in other parts of the world where Indian people have lived. The leaves are widely farmed and are most commonly linked with South Indian cuisine. Curry leaves have been used to spice vegetables since the first to fourth centuries AD, according to early Tamil literature. Kannada literature mentions it use a few decades later. Curry leaves are still closely connected with South India, where the term 'curry' comes from the Tamil word 'kari' meaning spiced sauces. In India, curry leaf is also known as
kari-pattha [18].

1.2 Cultivation and Collection

Flowering begins in mid-April and ends in mid-May. The peak flowering season under Sanwara (H.P.) circumstances was recorded in the last week of April. The fruiting season was observed to last from the middle of July until the end of August. The peak fruiting season, however, was seen to extend from the last week of July to the first week of August. Curry leaves are native to India. Large shrubs to small trees. Pinnate leaves are commonly used in South Indian curries. Full sunlight or light shadow. Use palm or citrus fertiliser to increase leaf yield. Grows well in containers. Make sure the potting mix is well-drained. Grown outdoors in South Florida, South Texas, and Southern California. Keep warm. Handle seeds carefully because they are delicate.
The seeds come in a damp peatmoss/coir mixture and should be planted right away [18].

1.3 Biological source

Leaves of the curry tree, *Murraya koenigii* or Bergera koenigii, is a tropical to sub-tropical tree.
Family: *Rutaceae*.

1.4 Taxonomic Classification

Kingdom – Plantae.
Sub-kingdom - Tracheobionta
Division - Magnoliophyta
Super-division - Spermatophyta
Class - Magnoliospida **Subclass** – Rosidae.
Order - Sapindales Family – Rutaceae.
Genus - Murraya J. Koenig ex L
Species -*Murraya koenigii* spreng.

1.5 Traditional Uses

Physicians utilize the bark and roots as stimulants. They are also used to treat skin outbreaks and deadly animal attacks. The green leaves are said to be consumed raw to treat diarrhoea and an infusion of the washed leaves reduces vomiting. Curry leaves can also be used to treat calcium deficiencies. It contains abundant of vitamins A, B, C, B2,

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calcium, and iron. Its nutritious significance benefits people of all ages. Curry leaves are an excellent natural calcium supplement for women suffering from calcium shortage, osteoporosis, and other conditions. Fresh curry leaf juice mixed with lime juice and sugar works well for treating morning sickness, nausea, and vomiting. In such cases, a teaspoon of lime juice might be taken. Curry leaves, ground to a fine paste and combined with buttermilk, can also be consumed on an empty stomach with positive outcomes in the event of stomach disturbances. Also used as a laxative. Boils and similar outbreaks form on the skin throughout the summer. Most boils go away on their own, but others may linger and cause pain. Curry leaves can help treat such illnesses. For immediate relief, apply a curry leaf paste to these stubborn boils [18].

1.6 Morphological Characters

A little spreading shrub that grows to a height of approximately 2.5 metres. Its main stem measures 16 cm in diameter and has bark that can be peeled away lengthwise to reveal the white wood beneath. Exstipulate, bipinnately compound leaves with reticulate venation are 30 cm long and comprise 24 lance-shaped leaflets measuring 4.9 cm long, 1.8 cm wide, and with a 0.5 cm long petiole.

The average diameter of a fully opened flower is 1.12 cm; the inflorescence is a terminal cyme with each bearing 60 to 90 flowers; the calyx is 5-lobed, persistent, inferior, green; and the flowers are bisexual, white, funnel-shaped, sweetly scented, stalked, complete, ebracteate, regular, actinomorphic, pentamerous, and hypogynous Corolla, white, inferior, polypetalous, with five lance-shaped petals; length, 5 mm; androecium, polyandrous, with ten stamens, dorsifixed, arranged into circles of five each; shorter stamen, 4 mm long; longer stamen, 5 to 6 mm; gynoecium, 5 to 6 mm long; stigma, bright, sticky; style, short; ovary, superior. Fruits are oblong to spherical, 1.4 to 1.6 cm long, and 1 to 1.2 cm wide.

They weigh 880 mg and have a volume of 895 µl. The fully developed fruits are black. a highly reflective surface; Wistaria blue 640/2 pulp; and 32-80 fruits each cluster, depending on the variety. One seed per fruit, measuring 11 mm long by 8 mm wide and coloured spinach green (0960/3), weighs 445 mg and has a capacity of 460 microliters [29].

1.7 Health Benefits

1. **Powerful antioxidant:** Curry leaves are high in plant components that are potent antioxidants. These molecules keep us healthy and prevent a variety of ailments. They protect us from oxidative damage, hence preventing disorders of the brain system, cardiovascular system, kidneys, and so forth.
2. **May reduce the risk of cancer:** Curry leaves contain antimutagenic properties. They safeguard our body against several types of cancer. Curry leaves contain flavonoids, which function as anticancer agents. They effectively prevent the proliferation of breast cancer cells. Curry leaves also protect the body from colon cancer. Curry leaves can also help prevent cervical cancer.
3. **Reduces risk of heart diseases:** Curry leaves protect our hearts from oxidative damage. Curry leaves also reduce cholesterol levels. It also decreases triglyceride levels. Reducing risk factors helps to protect us from heart disease.
4. **Helps in the management of diabetes:** Curry leaves help to treat diabetes and its consequences. Curry leaves were discovered to be quite good at lowering blood glucose levels. Curry leaves are high in fibre, which slows digestion and prevents abrupt blood sugar increases in our blood. They also increase insulin activity, which further benefits diabetic people. You can use the Diabetes Food Chart to locate additional items that can be included in your Diabetic Diet Plan.
5. **Analgesic:** Curry leaves were discovered to be effective pain relievers and have been used traditionally as an analgesic.
6. **Heals wounds**: Curry leaves can also be applied topically! Curry leaf paste can be used to wounds, moderate burns, or rashes to help them heal. Curry leaves contain antibacterial characteristics that can even protect

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wounds on the skin from infection.[33]

1.8 Phytotomy

1. Leaf

Murraya koenigii leaves include koenimbine, O-methyl murrayamine, O-methyl mahanine, isomahanine, bismahanine, and bispyrayafoline, as well as koenigine, koenine, koenidine, mahanimbine, isomahanimbine, koenimbidine, murrayacine, isomahanimbicine, and Euch.rest The primary components of dried leaves include glycozoline, 1-formyl-3-methoxy-6-methyl carbazole, and 6,7-dimethoxy-1-hydroxy-3-methyl carbazole. Murraya koenigii's leaves also include nicotinic acid, protein, carbohydrates, fiber, minerals, and carotenoids [30].

Fig. 2: Leaf of plant

2. Seed

Murraya koenigii seeds contain three biologically active carbazole alkaloids: koenimbine, koenine, and kurryam. Additionally, the seed contains mahanimbine, girinimbine, koenimbine, mahanine, and isomahanine. *Murraya koenigii* seeds contained minor furocoumarins such as xanthotoxin, isobyaknagelicol, byakangelicol, and isogosferol, as well as an indicolactone, anisoalctone, and 2,3-epoxyindicolactone, a furocoumarin lactone. This will be the first furocoumarin with a monoterpenoid lactone chain. *Murraya koenigii* seeds also contained bergaptan, isoheraclenin, oxypeucedanin, isopimpinellin, and isoimperatonin [31].

Fig. 3: Seed of plant

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3.Fruit

Mahanimbine and koenimbine can be isolated from *Murraya koenigii* fruit using petroleum ether. In addition to mahanimbine, murrayazolidine, girinimbine, koenimbine, and mahanine, isomahanine and murrayanol have been identified [31].

Fig. 4: Fruit of plant

4.Root

Murraya koenigii roots include bioactive compounds like marmesin-1"-O-rutinoside, murrayanol, and murrayagetin. In addition, the bark of the plant was utilized to extract the three monomeric and five binary carbazole alkaloids mukoenine-A, B, and C, as well as murrastifoline-F. These compounds included bis-2-hydroxy-3-methyl carbazole, bismahanine, bi-koeniquinone-A, and bismurrayaquinone-A. The root's benzene extract contains mukoline and mukolidine. Girinimbine was also detected in the root, and the root bark includes koenoline, a compound that stands for 1-methoxy-3-hydroxy methyl carbazole [32].

Fig. 5: Root of plant

5.Flower

The plant devotes the majority of its energy to nourishing the flowers before they mature and turn into fruits. The plant's growth is significantly slowed as a result. So, unless you have a need to cultivate curry leaf seeds, cut off the

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plant's flower buds right away. Linalool (32.83%), elemol (7.44%), geranyl acetate (6.18%), myrcene (6.12%), allo-ocimene (5.02%), α-terpinene (4.9%), and (E)-β-ocimene (3.68%) are the major chemicals [31].

Fig. 6: Flowers of plants

1.9 CHEMICAL CONSTITUENTS

The plant extract made from *Murraya koenigii* in solvents including petroleum ether, ethyl acetate, chloroform, ethanol, and water contains a variety of organic components with varying chemical compositions, including alkaloids, flavonoids, carbohydrates, and sterol [19].

- Volatile oil
- Flavonoids
- Alkaloids
- Phenolic acid
- Glycosides
- Saponins [20]

1.10 PHARMACOLOGICAL ACTIVITIES

1. Antioxidant
2. Anti-inflammatory
3. Antimicrobial
4. Anticancer
5. Anti-diabetic
6. Hepatoprotective

1. ANTIOXIDANTS:

Reactive oxygen species (ROS) are often formed as byproducts of cellular metabolic processes and external stimulation. ROS includes singlet oxygen (O2), hydrogen peroxide (H2O2), the superoxide anion (O2), and the hydroxyl radical (OH). These ROS disrupt homeostasis, resulting in oxidative stress, which kills cells and damages tissues [21]. High levels of ROS can damage biomolecules such as lipids, proteins, and nucleic acids [22]. Even when antioxidant defense mechanisms such as enzymatic and non-enzymatic antioxidants are in place and

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functioning, unregulated ROS accumulation over a person's lifespan promotes the emergence of age-related diseases such as cancer, atherosclerosis, arthritis, and so on [23].

2. ANTI-INFLAMMATORY:

In comparison to petroleum ether and hexane extracts, which do not diminish inflammation, *Murraya koenigii* leaf extract in methanol and aqueous form was found to be effective against carrageenan-induced edoema in male albino rats at a dose of 400 mg/kg. When compared to the aqueous extract, the methanol extract was found to have the highest anti-inflammatory
activity **[24].**

3. ANTIMICROBIAL:

Anti-microbiological activity Bacillus subtilis, Staphylococcus aureus, Escherichia coli, Salmonella typhi, and fungal strains of Aspergillus niger, Candida albicans, and Trichophyton rubrum were tested against Murraya koenigii root extract in hexane, methanol, and chloroform. All of the bacteria tested responded positively to Murraya koenigii root extracts in hexane, methanol, and chloroform, with the methanol extract having the strongest antimicrobial effects overall and being most effective against Staphylococcus aureus and Trichophyton rubrum. The aqueous root extract was found to be ineffective against the tested pathogen, and Staphylococcus aureus was susceptible to all three of the extracts [25].

4. ANTICANCER:

Carbazole girinimbine, obtained from Murraya koenigii bark, induces widespread programmed cell death in HepG2 cells. The findings of the 2010 experiment demonstrated that mahanine was engaged in the death receptor-mediated extrinsic mechanism of apoptosis. Although it failed to develop in K562 cells, it did show anti-cancer activity in MOLT-3 cells. In addition, pyrayafoline, murrafoline, and three carbazole alkaloids, including mahanine, are highly effective against HL-60 cells. Mahanine was also identified as the primary anti-cancer bioactive component in M. koenigii [26].

5. Anti-diabetic:

The dried plant's petroleum ether extract was treated to column chromatography to isolate mahanimbine, a chemical component of M. koenigii. The anti-diabetic effect of the pure material was investigated in streptozotocin-induced Wistar rats at doses of 50 mg/kg and 100 mg/kg. Mahanimbine may lower blood sugar levels by amplifying the effects of insulin, either by increasing pancreatic insulin secretion from islets of langerhans beta cells or by improving peripheral glucose uptake. In comparison to acarbose, mahanimbine greatly suppressed alphaamylase **[27].**

6. Hepatoprotective:

The efficacy of commonly available medicinal treatments for liver disorders is limited. Herbs have been used to treat a range of medical ailments since ancient times; plant extracts and other natural substances have major hepatoprotective properties. It is the organ most exposed to xenobiotics since it is responsible for drug metabolism and the detoxification of hazardous metabolites [28].

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II. CONCLUSION

The plant has a variety of significant pharmacological actions, including cardiac activity, antidiabetic and cholesterol-lowering properties, antibacterial activity, antiulcer activity, antioxidative property, cytotoxic activity, anti-diarrheal activity, and phagocytic activity. *Murraya koenigii* was a therapeutically useful herb that our ancestors employed many centuries ago. In the current globalization era, it is difficult to find a curry plant in the majority of homes, and many diets have relied on synthetic agents as a taste enhancer instead of curry leaves.

REFERENCES

1. Sangam, S., Naveed, A., Athar, M., Prathyusha, P., Moulika, S., & Lakshmi, S. (2015). A study on functional measures in patients with stroke. *International Journal of Health Sciences and Research*, *5*(1), 156-164.
2. Bhusal, D., & Thakur, D. P. (2021). Curry Leaf: A Review. *Reviews in Food and Agriculture*, *2*(1), 36-38.
3. Ajay, S., Rahul, S., Sumit, G., Paras, M., Mishra, A., & Gaurav, A. (2011). Comprehensive review: Murraya koenigii Linn. *Asian J Pharm Life Sci*, *2231*, 4423.
4. Trimen, H. (1895). *A Hand-book to the Flora of Ceylon: Valerianaceæ-Balanophoraceæ. With plates LI-LXXV* (Vol. 3). Dulau & Company.
5. Parmar, C., & Kaushal, M. K. (1982). Murraya koenigii. *Wild fruits*, 45-8.
6. Gajaria, T. K., Patel, D. K., Devkar, R. V., & Ramachandran, A. V. (2015). Flavonoid rich extract of Murraya Koenigii alleviates in-vitro LDL oxidation and oxidized LDL induced apoptosis in raw 264.7 Murine macrophage cells. *Journal of food science and technology*, *52*, 3367-3375.
7. Goutam, M.P.; Purohit, R.M. Antimicrobial activity of the essential oil of the leaves of Murraya koenigii (Linn) Spreng (Indian curry leaf). Indian J. Pharm. 1974, 2, 48–51.
8. Maswada, H. F., & Abdallah, S. A. (2013). In vitro antifungal activity of three geophytic plant extracts against three post-harvest pathogenic fungi. *Pakistan Journal of Biological Sciences: PJBS*, *16*(23), 1698-1705.
9. Bonde, S.D.; Nemade, L.S.; Patel, M.R.; Patel, A.A. Murraya koenigii (Curry leaf): Ethnobotany, Phytochemistry and Pharmacology—A Review. Int. J. Pharm. Phyto pharma.
10. Res. 2011, 1, 23.
11. Husna, F., Suyatna, F. D., Arozal, W., & Poerwaningsih, E. H. (2018). Anti-diabetic potential of Murraya koenigii (L.) and its antioxidant capacity in nicotinamide-streptozotocin induced diabetic rats. *Drug research*, *68*(11), 631-636.
12. Bhandari, P. (2012). Curry leaf (Murraya koenigii) or Cure leaf: Review of its curative properties. *Journal of medical nutrition and nutraceuticals*, *1*(2), 92-92.
13. Gajaria, T. K., Patel, D. K., Devkar, R. V., & Ramachandran, A. V. (2015). Flavonoid rich extract of Murraya Koenigii alleviates in-vitro LDL oxidation and oxidized LDL induced apoptosis in raw 264.7 Murine macrophage cells. *Journal of food science and technology*, *52*, 3367-3375.
14. Ma, Q. G., Xu, K., Sang, Z. P., Wei, R. R., Liu, W. M., Su, Y. L., ... & Li, L. J. (2016). Alkenes with antioxidative activities from Murraya koenigii (L.) Spreng. *Bioorganic & Medicinal Chemistry Letters*, *26*(3), 799-803.
15. Mandal, S., Nayak, A., Kar, M., Banerjee, S. K., Das, A., Upadhyay, S. N., ... & Banerji, J. (2010). Antidiarrhoeal activity of carbazole alkaloids from Murraya koenigii Spreng (Rutaceae) seeds. *Fitoterapia*, *81*(1), 72-74.
16. Ningappa, M. B., Dhananjaya, B. L., Dinesha, R., Harsha, R., & Srinivas, L. (2010). Potent antibacterial property of APC protein from curry leaves (Murraya koenigii L.). *Food chemistry*, *118*(3), 747-750.

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Impact Factor: 8.2

17. Rautela, R., Das, G. K., Khan, F. A., Prasad, S., Kumar, A., Prasad, J. K., ... & Srivastava, S. K. (2018). Antibacterial, anti-inflammatory and antioxidant effects of Aegle marmelos and Murraya koenigii in dairy cows with endometritis. *Livestock science*, *214*, 142-148.
18. Mani, V., Ramasamy, K., Ahmad, A., Wahab, S. N., Jaafar, S. M., Kek, T. L., ... & Majeed, A. B. A. (2013). Effects of the total alkaloidal extract of Murraya koenigii leaf on oxidative stress and cholinergic transmission in aged mice. *Phytotherapy Research*, *27*(1), 46-53.
19. Singh, S., More, P. K., & Mohan, S. M. (2014). Curry leaves (Murraya koenigii Linn. Sprengal)-a mircale plant. *Indian Journal of Scientific Research*, *4*(1), 46-52.
20. Sathaye, S., Bagul, Y., Gupta, S., Kaur, H., & Redkar, R. (2011). Hepatoprotective effects of aqueous leaf extract and crude isolates of Murraya koenigii against in vitro ethanol-induced hepatotoxicity model. *Experimental and Toxicologic Pathology*, *63*(6), 587-591.
21. Franyoto, Y. D., Nurrochmad, A., & Fakhrudin, N. (2024). Murraya koenigii L. Spreng.: An updated review of chemical composition, pharmacological effects, and toxicity studies. *Journal of Applied Pharmaceutical Science*.
22. Brand, M. D., Affourtit, C., Esteves, T. C., Green, K., Lambert, A. J., Miwa, S., ... & Parker, N. (2004). Mitochondrial superoxide: production, biological effects, and activation of uncoupling proteins. *Free Radical Biology and Medicine*, *37*(6), 755-767.
23. Thannickal, V. J., & Fanburg, B. L. (2000). Reactive oxygen species in cell signaling. *American Journal of Physiology-Lung Cellular and Molecular Physiology*, *279*(6), L1005-L1028.
24. Hoidal, J. R. (2001). Reactive oxygen species and cell signaling. *American journal of respiratory cell and molecular biology*, *25*(6), 661-663.
25. Aniqa, A., Sadwal, S., & Kaur, S. (2022). A REVIEW OF THE BIOLOGICAL ACTIVITIES AND MEDICINAL PROPERTIES OF MURRAYA KOENIGII.
26. Malwal, M., & Sarin, R. (2011). Antimicrobial efficacy of Murraya koenigii (Linn.) Spreng. root extracts.
27. Samanta, S. K., Kandimalla, R., Gogoi, B., Dutta, K. N., Choudhury, P., Deb, P. K., ... & Talukdar, N. C. (2018). Phytochemical portfolio and anticancer activity of Murraya koenigii and its primary active component, mahanine. *Pharmacological research*, *129*, 227-236.
28. Dineshkumar B, Mitra A, Mahadevappa M. Antidiabetic and hypolipidemic effects of mahanimbine carbazole alkaloid from Murraya koenigii Rutaceae leaves. International Journal of Phytomedicine. 2010; 2:22-30.
29. Manfo, F. P. T., Nantia, E. A., & Kuete, V. (2014). Hepatotoxicity and hepatoprotective effects of African medicinal plants. *Toxicological Survey of african medicinal plants*, 323-355.
30. Bonde, S. D., Nemade, L. S., Patel, M. R., & Patel, A. A. (2011). Murraya koenigii (Curry leaf): Ethnobotany, phytochemistry and pharmacology-A review. *International Journal of Pharmaceutical and Phytopharmacological Research*, *1*(1), 23.