

**A PHARMACOLOGICAL REVIEW ON *MURRAYA KOENIGII*****Khedkar Bhagyashree Balasaheb\*, Dr. Rao Priya S. and Dr. Siddheshwar S. S.**

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Pharmacognosy.**ABSTRACT**

The *Murraya koenigii* is a tropical to sub-tropical tree which is native to India and Sri Lanka. It belongs to family Rutaceae. *Murraya koenigii* is a culinary important plant of Indian origin, and also been component of many formulations used in the Ayurvedic system of medicine. A scrutiny of literature reveals some notable pharmacological activities of the plant Carbazole alkaloids which is present in the leaves, roots, fruits and bark which shows antidiabetic, anticancer, antibacterial and anti-inflammatory activities. The inflammatory process may be defined as a sequence of events that occurs in response to noxious stimuli, infection or trauma. Non-steroidal anti-inflammatory drugs (NSAIDs) are effective for the treatment of pain, inflammation and fever. The present paper involves

*Murraya koenigii* plant bark along with their chemical constituents and pharmacological profile which focus on the dose administered, bioactive extract involved in anti-inflammatory mechanism.

**KEYWORDS:** *Murraya Koenigii* (Rutaceae), Pharmacological activity.**INTRODUCTION<sup>[1]</sup>**

Man uses plants in many ways to meet his basic needs food, clothing and shelter. Wild plants supply medicines, crafts and cosmetics to rural and urban communities. In addition, wild plants are the sources of income and employment to the rural areas. Important herbal products are spices, herbal teas, functional food ingredients, medicinal raw materials, aromatic plants, essential oils, flavoring, fragrant products and dietary supplements. Plants have also been used as medicines for thousands of years all over the world. WHO estimates

indicate that 80% of the population, mostly in developing countries still relies on plant-based medicines for primary care WHO 1978.

Herbal medicines are plant derived material and preparation with therapeutic or other human health benefits which contain either raw or processed ingredients from one or more plant, inorganic materials or animal origin. Herbal medicine preparations are developed and created drugs by the modern pharmaceutical industry. Nowadays, they are manufactured and sold most widely on the pharmaceutical market for curing diseases and promoting public health in india.

The *Murraya koenigii* is a tropical to sub-tropical tree which is native to India and Sri Lanka. It belongs to family Rutaceae. *Murraya koenigii* is an aromatic more or less deciduous shrub or a small tree up to 6m in height and 15-40cm in diameter. The *Murraya koenigii* plant is widely used as herb, spice, condiments and also used to treat various types of ailments in Indian traditional system. The *Murraya koenigii* tree contains a carbazole isolated from *Murraya koenigii* plant. Bark contains carbazole alkaloids like murrayacine, murrayazolidine, murrayazoline, mahanimbine, girinimbine, koenioline and xynthyletin. Bark and roots are used as stimulant and externally to cure eruptions and bites of poisonous animals. Green leaves are eaten raw for cure of dysentery, diarrhoea and for checking vomiting. Leaves and roots are also used traditionally as bitter, anthelmintic, analgesic, curing piles, inflammation, itching and are useful in leucoderma and blood disorder. *Murraya koenigii* plant has been reported to have anti-oxidative, cytotoxic, antimicrobial, antibacterial, diabetes, anti ulcer, positive inotropic and cholesterol reducing activities has been reported with the presence of flavanoids and carbazole alkaloids which has a remarkable anti-inflammatory activity.

### **Plant Description<sup>[2]</sup>**

A small aromatic tree with dark grey bark. Leaves imparipinnate, alternate leaflets alternate, obliquely ovate, gland dotted and aromatic; flowers white in terminal corymbose cymes, fragrant; fruits subglobose berries dark purple when ripe. 2 seeded. Flowering starts from the middle of April and ends in the middle of May. The fruiting season was observed to continue from the middle of July to the end of August. For Propagation and cultivation through seeds, the seeds must be ripe and fresh to plant. The dried or shriveled fruits are not viable. One can plant the whole fruit, but it's best to remove the pulp before planting in potting mix that is kept moist but not wet. Stem cuttings can be also used for propagation.

**Scientific Classification**<sup>[5]</sup>

Kingdom Plantae – Plants

Subkingdom Tracheobionta – Vascular plants

Superdivision Spermatophyta – Seed plants

Division Magnoliophyta – Flowering plants

Class Magnoliopsida – Dicotyledons

Subclass Rosidae Order Sapindales

Family Rutaceae – Rue family

Genus *Murraya* J. Koenig ex L. – *murraya*

Species *Murraya koenigii* (L.) Spreng. – curryleaftree

**Chemical Constituents**<sup>[3]</sup>

The *Murraya koenigii* tree contains a carbazole isolated from this plant. Curry leaf contains the amino acid cysteine. The leaves of *Murraya koenigii* contain proteins, carbohydrate, fiber, minerals, carotene, nicotinic acid, Vitamin C, Vitamin A, calcium and oxalic acid. It also contains crystalline glycosides, carbazole alkaloids, koenigin, girinimbin, iso-mahanimbin, koenine, koenidine and koenimbine. Triterpenoid alkaloids cyclomahanimbine, tetrahydromahanimbine are also present in the leaves.

Bark contains carbazole alkaloids like murrayacine, murrayazolidine, murrayazoline, mahanimbine, girinimbine, koenioline and xynthyletin.

The pulp of fruits generally contain 64.9% moisture, 9.76% total sugar, 9.58% reducing sugar and negligible amount of tannin and acids, besides containing 13.35% Vitamin C. The pulp of fruit also contains trace amounts of minerals, 1.97% phosphorus, 0.082% potassium, 0.811% calcium, 0.166% magnesium, 0.007% iron and remarkable amount of protein. Carbazole alkaloids which are abundantly present in the leaves, fruits, roots and bark of this plant, have been reported for their antidiabetic, anticancer, antibacterial, anti-nociceptive and antioxidant activities.

**Ayurvedic Properties**<sup>[3]</sup>

Rasa : Katu, Tikta, Madhura

Guna : Guru, Rooksha

Virya : Ushna

Vipak : Katu.

**Medicinal uses<sup>[3]</sup>**

*Murraya koenigii* is an aromatic stomachic and carminative and is useful in anorexia acute and chronic dyspepsia flatulence and colic. It is often employed to correct the griping pains caused by purgatives. It is used as an antidote for snake bites especially the bites of Kraits.

**Useful part<sup>[4]</sup>**

Root, Bark, Leaves Curry leaf tree (*Murraya koenigii* L., Family: Rutaceae) is a plant which has various important uses in the traditional system of medicine in Eastern Asia.

Based on ethnomedicine, *Murraya koenigii* is used as a stimulant, antidysentric and for the management of Diabetes Mellitus. The plant is highly valued for its leaves an important ingredient in an Indian cuisine to promote appetite and digestion.

The leaves, root and bark are tonic, stomachic, and carminative. Leaves are used internally in dysentery also checking vomittig. Steam distillate of the leaves can be used as stomachic, purgative, febrifuge and anti emetic.

Leaves are applied externally to bruises and eruption.

The leaves and roots are bitter, acrid, cooling, anthelmintic, analgesic, it cures piles, allays heat of the body, thirst, inflammation and itching. It is also useful in leucoderma and blood disorders. An infusion of the toasted leaves in used to stop vomiting. The juice of the root is good for pain associated with kidney. Crushed leaves are applied externally cures skin eruption and to relieves burn. The pastes of leaves are applied externally to treat the bites of poisonous animals. The plant is credited with tonic and stomachic property. The branches of *Murraya koenigii* are very popular for cleaning the teeth as datun. It is also said that the branches of *Murraya koenigii* are used to strengthen gums and teeth's.

Pharmacological Activity of *Murraya koenigii*

Sr. No	Pharmacological Activity	Plant part used	Extract	Reference
1.	Anti-diabetic	Whole plant, Leaves, Fruit	Chloroform, Aqueous, methanol.	[6]
2.	Antioxidative	Leaves	Methanol and Aqueous.	[7]
3.	Anti-inflammatory	Leaf, Bark	Ethanol, Petroleum ether, Chloroform, methanol	[1]
4.	Anti-helminthic	Leaf	Alcoholic	[3]
5.	Antifungal activity	Leaves, Root.	Ethanol	[8]
6.	Nephroprotective Activity	Stem	Petroleum ether, Chloroform, ethanol and Aqueous.	[11]
7.	Anticancer Activity	Stem bark	Petroleum ether, chloroform and acetone	[9]
8.	Antidiarrhoeal activity	Seeds	n-hexane	[10]
9.	Antibacterial activity	Leaves and bark	Ethanol and Chloroform	[12]
10.	Wound healing	Leaves	Ethanol	[13]
11.	Anti-microbial	Root	Petroleum ether, Chloroform, Ethyl acetate and Ethanol	[14]
12.	Antidepressant activity	Leaves	Petroleum ether, Aqueous, methanolic.	[15]
13.	Analgesic and Antinociceptive	Leaf	Aqueous.	[16]
14.	Anti-leukemial	Stem bark	Ethanol, Aqueous	[17]

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