



A REVIEW ON MULTI-POTENTIAL MEDICINAL PLANT MURRAYA KOENIGII (CURRY LEAVE)

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ABSTRACT :

Curry leaves (*Murraya koenigii*), native to South Asian countries are commonly used as a food, flavoring agent and known to have antioxidant, anti-inflammatory and antidiabetic activities flavor it posses numerous remedial properties which produce it distinctive from other sauce. After large number of literature survey, the paper consists of collection of information related to this herbs. Curry leaf (*Murraya koenigii*) belongs to the family Rutaceae consisting 150 genera and 1600 species (Sangam et al., 2015). It is obtained from domestic South Asia particularly India, Sri Lanka and Bangladesh (Mustafa and Oktavia).

Murraya koenigii Spreng is called as „Surabhinimba” in Sanskrit Curry leaves is called by different name by the different ethnic, In Tamil we called as Karivempu, Bengali as „Barsunga”, in Hindi we called as Kurrypatte.

The work of curry tree dates to 1st and 4th century AD. Tamil and Kannada literature narrate *Murraya koenigii* as Kari used as a flavouring agent (Mittal, 2017). It is observe as one of the main factor in South Asian cuisine for its odour and smell (Ghimire and Magar, 2018).

it maintains its flavour and other qualities even after drying, making it to be used as a popular spice and condiment in tropical countries.

Herbal plants contain many biologically active components which are helpful in better the life and treatment of disease. Component such as carbohydrates, proteins, enzymes, fats, oils, terpenoids, flavonoids, sterols simple phenolic component etc. Natural products are the source of synthetic and traditional herbal medicine and are quite the prime health care system.

KEY WORD :

Curry leave ,synonym of curry tree , pharmacology , biological sours ,pharmacology, traditional uses , antioxidant , antidiabetic , antibacterioial , , phytochemistry, industrial uses, medicinal uses.

SYNONYM:

Curry Leaf (English), Karepaku (Andhra Pradesh), Narasingha (Assam); Barsanga, Kartaphulli (Bengal); Gorenimb (Gujrat); Mitha Neem (Himachal Pradesh); Kathnim, Mitha Neem, Kurry Patta (Hindi); Karibevea (Karnataka); Kariveppilei (Kerala); Gandhela, Gandla, Gani (Kumaon); Bhursanga (Orissa); Mahanimb

PHARMACOGNOCY:

The presence of main chemical substance make the plant useful for treating different disorder and have a possible of providing useful drugs of human use. The significant resolution of pharmacognosticvariabl will help for setting standards for crude drugs.

The posology constants being the leaves of this plant, the diagnostic microscopic charecteristic and the numerical standards are reported, which is useful for the difficulties of a suitable monograph for its actual identification. Microscopic and morphological feature were examined by toxicology evaluation, which also includes the determination of leaf content, ash value, powder scanning and extractive values. Phytochemical screenings together with qualitative chemical examination were also performed. The leaf had associate evenation and dentate margin with asymmetrical base. The stomata were diffuse on both the sides. Phytochemicals being carbohydrates, alkaloids, sterols, tannins, volatile oils, saponins, anthroquinone glycosides and flavanoids are describe. The organoleptic feature including colour, odour, taste and external features of bark of *M. Koenigii* were observed .

Powdered leaf material was inspect for its flaming with chemical reagents being alcohol, sulphuric acid, sodium hydroxide and nitric acid.

Biological source:

Murraya koenigii (L.) Spreng or its usual name curry leaf tree is a small strong smelling everlasting shrub usually occur in forests as undergrowth. It was firstly cultivated in India for its fragrant leaves and for trinket is normally used for natural flavoring in curries and sauces.

Chemical constituent

The oils from the curry leaves were occur to carry mostly oxygenated monoterpenes. Using GC and GC-MS 33 constituents were occur with 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%) as the major compounds.

Cultivation and collection:

Red sandy loam with good effluent are ideal for better leaf yield. The best temperature requirement is 26° to 37°C. The main season of obtainability of curry leaf fruits is July – August. With in 3 - 4 days of collection of fruits, the seeds should be pulped and spread in nursery beds or sack.

Pharmacology**Antidiabetic property:**

Mahanimbine a chemical constituent of *M. koenigii* was outlying from column chromatography of the petroleum ether tack out of dried plant. The anti-diabetic activity was carry out on the streptozotocin induced wistar rats by using moral compound at a dose of 50 mg/kg and 100 mg/kg. The viable mechanism by which the mahanimbine reduce blood sugar level may be by potentiating of insulin effect

either by in enlarge the pancreatic production of insulin from beta cells of islets of langerhans or by enlarge the peripheral glucose absorption. Mahanimbine showed considerable alpha amylase inhibitory effect as compared with acarbose.

Antiulcer Activity:

Antiulcer activity of saturated and ether extracts of *M. koenigii* was concious in reserpine induced stomach ulcer model in albino rats. Extracts were effective in stomach ulceration and suggested as defencive as ranitidine 26 . Crude sasturated extract of leaves showed anti-ulcer activity which was assess by using models of acute intestinal wound convince by ethanol induced, aspirin induced, cold restrain stress and pylorus ligation in rats. Animals were proseed with doses of 200 mg/kg and 400 mg/kg of saturated extract which showed systematic reduction in lesion index, total affected area and percentage of lesion in contrast with control group in the ethanol induced, aspirin induced, cold restrain stress induced ulcer and pylorus ligation models. These examination gives a authentication about saturated extract of leaves of *M. koenigii* can act as moral anti-ulcer drug .

Cytotoxic Activity:

The isolated carbazole alkaloid as Koenoline through the root bark of *M. koenigii* show the cytotoxic activity against KB cell culture system. Carbazole alkaloids outlying from the stems of *M. koenigii* have effects on the against KB cell culture system. Carbazole alkaloids outlying from the stems of *M. koenigii* have result on the extension of the human leukemia cell line HL-60. Also, the carbazole alkaloids, mahanine, Pyrafoline-D andmurrayfoline-I exhibit consequence cytotoxicity against HL-60 cells and convince the dropping of mitochondrial membrane prospective. The crucial oil from *M. koenigii* leaves exhibit antibacterial result in oppsite to *B. subtilis*, *Staph. aureus*, *C. pyogenes*, *P. vulgaris* and *Pasteurella multocida*. The pure oil was active against the first three organisms even at a dilution of 1: 50034The acetone extract of the fresh leaves of *M. koenigii* on fractionation show three bioactive carbazole alkaloids named as mahanimbine,

Antiprotozoal activity:

Ethanolic extracts (50 %) of *Murraya koenigii* whole plant excluding roots (extract A) and roots alone (extract B) were screened for their pharmacological actions. Extract A showed antiprotozoal action against *Ent. Histolytica*.

Anti-Hypertensive activity:

The angiotensin transmute enzyme inhibitor and the antihypertension food, possess activities for avert or improve one or more kind take from a shell of a seed of jatoba (*Hymenaea courbaril*), a leaf of guava, *M. koenigii*, *Tomarix chinensis* Lour, a leaf of *Morus bombycis*, an extract of *Mimusops elengi* and a product of the conshiolin with succinic anhydride.

Ethanolic extract of fresh leaves of *M. koenigii* exhibit a dose dependent constructive inotropic result on isolated frog heart by expand accessibility of calcium from extracellular sites.

TRADITIONAL USES:

Curry leaf plant is popular among South Asian Dishes for its peculiar taste and aroma. It has been used as a home medication after duration. The fragrant leaves are broadly used in flavoring curries to help appetite and digestion Leaves are narrowly used to treat external injuries, burns and remove poison from the bite of poisonous animals and for treating rheumatism. Baked leaves are used to check vomiting.

Finely grinded leaves mixed in butter milk have pragmatic effects for stomach distress and act as laxative although taken in an empty stomach . Fresh leaves juice mixed with lime and sugar is used to treat morning ailment and root juice utilization gives renal pain relief. Stem is used to cleanse teeth that accelerate reinforcing the gums . Fruit has anti-astringency properties. Root juice is used in kidney pain . Curry leaf can be used in treating calcium, vitamin insufficiency and anemia. Then antitumor, hypoglycaemia, anti-hypercholesterolemia effects of the plant have been occur anemia. Conventional Ayurveda require the utilize of curry leaf parts as a heal of cough, hypertension, hepatitis, rheumatism and hysteria. Traditionally curry leaves are boiled together with coconut oil until reduction to blanked remainder to be used as hair tonic for keeping natural hair tone and invigorating growth of hair .

Antioxidant Activity:

The literature showed that the antioxidative properties of the extract of *M.koenigii* leaves were done using different solvents. They were evaluated on the basis of oil stability index (OSI) together with their radical scavenging ability against 1-1-diphenyl-2-picrylhydrazyl (DPPH). The methylene chloride (CH₂Cl₂) take out and the ethyl acetate (EtOAc) soluble fragment of the 70 % acetone take out was extend the OSI values significantly contrast to those of α -tocopherol and BHT. Five carbazole alkaloids were outlying from the CH₂Cl₂ take out and their structures were identified to be euchrestine, bismurrayafoline, mahanine, mahanimbicine and mahanimbine based on ¹H and ¹³C NMR and mass spectral data

The plant take out of *M. koenigii* was examine for its vaible administrative effect on nitric oxide levels using sodium nitroprusside as a NO donor in vitro. The extract had shown direct scavenging of NO and show significant activity. The result showed that *M. koenigii* strenth be powerfull and novel medicinal agents for scavenging of NO, the rule of pathological conditions caused by immoderate generation of NO and its oxidation product, peroxyxynitrite.

Analgesic and antinociceptive activity:

The methanolic extract of leaves showed analgesic effect in hot platemodel and formalin induced paw licking response in mice. The occupation canbe linked to the processes require in the avoidance of sensitization of nociceptors, down rule of the sensitive nociceptors or blockade of the nociceptors at peripheral and central levels. Methanol extracts were taken at distinct concentrations, viz 100mg/ml, 200mg/ml and 400 mg/ml. in the middel of these 400 mg/ml exhibit prolific results 30

Anti-inflammatory:

The leaves of *Murraya koenigii* was subjected to extraction with three various solvents; petroleum ether, chloroform and ethanol. A dose of 250mg/kg was choose that a 1/10th of 2500mg/kg and that think about as LD₅₀, the dose was handel by oral route. Contrast to the three solvents, it was occur that ethanolic extract exhibit significant reduction in carrageenan convince paw edema in the Albino rats of the wistar strain.

Phytochemistry:

Leaves are fragrant and carry proteins, carbohydrates, fiber, minerals, carotene, nicotinic acid and vitamin C. It is rich in vitamin A. and calcium The leaves carry large quantity of oxalic acid, it also carry crystalline glycosides,carbazole alkaloids, koenigin, resin, fresh leaves carry yellow color 2.5 % volatile oil.4 It also carry girinimbin, iso-mahanimbin, koenine, koenigine, koenidine and koenimbine.5 Mahanimbicine and bicyclomahanimbicine, phebalosin, coumarine as Murrayone imperatoxin etc outlying through leaves.6 Triterpenoid alkaloids cyclomahanimbine, tetrahydromahanimbinealso presents

in the leaves.7,8 Murrayastine, murrayaline, pypayafolinecarbazole alkaloids and many other chemical component have been reported in the leaves of *Murraya koenigii*.9 Bark mainly carry the carbazole alkaloids as murrayacine, murrayazolidine, murrayazoline, mahanimbine, girinimbine, koenioline, xynthyletin.10 The mash of fruits generally carry 64.9% moisture, 9.76% total sugar, 9.58% reducing sugar, 0.17% non reducing sugar and less amount of tannin and acids. It also carry 13.35% of vit. C. The mash of fruits also carry trace amount of minerals 1.97% phosphorus, 0.082% potassium, 0.811% calcium, 0.166% magnesium, 0.007% iron. It also carry markable amount of protein

Morphological characteristic

Murraya koenigii has small spreading shrub that about 2.5 meters in height, the stem is dark green to brownish in color. Upon blister of the bark lengthwise the below white wood is visible. The main stem's diameter is about 16cm. The leaves are about 30 cm long with each bearing 24 leaflets and have a associate seam. The flower is white funnel- shaped, having a sweet fragrant feature and the average diameter of fully opened flower would be 1.12cm and it is bisexual. The fruits are round to oval in shape with 1.4 to 1.6cm in length and 1 to 1.2cm in the diameter. The fruit upon fully mature will be black in color along with a shining surface and the mash will be in wisteria blue. The seed will be blue-green with 11mm long and weigh about 445mg^{8,9}

Industrial Uses:

The essential oils through the plant could be used in sun protection creams and erythema formulations. It also used for aromatherapy in the soap and cosmetic sector. Some Industrial products of Curry plant are fabricated with a volatile oil, crystalline glycoside and murragin obtain through the flowers . The beta carotene, folic acid, riboflavin, calcium and zinc here in curry leaf are helpful for oral health and can be during manufacturing of mouthwashes . Curry leaf oil is mostly exported from India that can be extracted from the seeds of the plant . Stem extract could be used in skin lightening and rough skin improving creams

Medicinal importance :

Green leaves are eaten raw for the cure of dysentery, diarrhea, and for checking to vomit . Leaves and roots are also used traditionally as an anthelmintic, analgesic, curing piles, inflammation, itching and are useful in leucoderma and blood disorders. This plant has been reported to have antioxidative, antimicrobial, antibacterial, antiulcer, and cholesterol-reducing activities

Conclusion:

Murraya koenigii was one of the medically favourable plant which done for many century before by our forebear. In the topical development, it is difficult to observe a curry plant in majority of the houses and many edibles became dependent to synthetic agent as taste enhancer opposed to curry leaves.so, the importance of these useful plant must be emphasized and the functionalized of *Murraya koenigii* must be examine further and used against the disease that have been developed resistance and symbiotic studies must be accomplished.

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