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Beena Kumari
Department of Botany,
Hindu College, Moradabad,
Uttar Pradesh, India

Taxonomy and ethnobotany of *Murraya koenigii* (L.) Spreng: An exotic shrub in Rohilkhand region of Uttar Pradesh

Beena Kumari

Abstract

“Medicine is food and food is medicine” is the best way to describe on how the ailments were cured by using the plants during the ancient period of time. The “Magical plant of Indian Spice” (*Murraya koenigii*) has served humankind not only as food enhancer but also serve as village or folk medication to cure many disorders, the tribal communities have used many parts of the *Murraya koenigii* to cure them. A survey of study area revealed that *Murraya koenigii* used to cure puerperal fever, diabetes, obesity, dysentery disorders, renal pain, stomach upsets and morning sickness.

Keywords: *Murraya koenigii*, exotic, taxonomy, ethnobotanical use, Rohilkhand region

Introduction

Murraya koenigii (L.) Spreng. (Family- Rutaceae) commonly known as Meetha neem, is an aromatic more or less deciduous shrub or a small tree up to 6 m in height found throughout India up to an altitude of 1500 m and are cultivated for its aromatic leaves. Its family represents more than 150 genera and 1600 species in the World. It abundantly occurs along the outer Himalayas, Assam, Andaman Islands, Maharashtra, Tamil Nadu, Andhra Pradesh and in the forests of Western Ghats in Karnataka. It is cultivated for its aromatic leaves in south East Asia and Australia, Upper and Lower Burma [1, 10]. It is brought from Andhra Pradesh to Rohilkhand region during 19th century for its aromatic leaves which were used in cookery. Now it is growing wildly in roadsides, agriculture fields and fruit orchards.

Curry leaves has slightly pungent, bitter and feebly acidic taste, and they retain their flavour and other qualities even after drying. Curry leaves are a popular leaf-spice and used in very small quantities for their distinct aroma due to the presence of volatile oil and their ability to improve digestion [3, 11]. Leaves are widely used in Indian cookery for flavouring foodstuffs [11]. Furthermore, it has Vitamin A, Vitamin B, Vitamin C, Vitamin B₂, Calcium and iron in plenty. Its nutritional value benefits both the young and the old alike. Women who suffer from calcium deficiency, osteoporosis etc. can find an ideal natural calcium supplement in curry leaves. In traditional system of medicine, it is used as antiemetic, antidiarrheal, dysentery, febrifuge, blood purifier, tonic, stomachic, antipyretic, antidiabetic, antiobesity, flavouring agent in curries and chutneys. The oil is used externally for bruises, eruption, in soap and perfume industry [2, 4, 5, 6, 7, 8].

Taxonomic Description

Murraya koenigii (L.) Spreng. is a subtropical tree which known as miracle plant, belongs to family Rutaceae. The main stem is dark green to brownish, with numerous dots on it. The bark can be peeled off longitudinally, exposing the white wood underneath. The girth of the main stem is 16 cm. Leaves are exstipulate, bipinnately compound, 30 cm long, each bearing 24 leaflets, having reticulate venation; leaflets, lanceolate, 4.9 cm long, 1.8 cm broad, having 0.5 cm long petiole. Inflorescence bears 60-90 flowers. They are bisexual, white, funnel-shaped, sweetly scented, stalked, complete, ebracteate, regular, actinomorphic, pentamerous, and hypogynous. The average diameter of a fully opened flower is 1.12 cm. Flowers with calyx 5 lobed, persistent, inferior, green; corolla, white, polypetalous, inferior, with 5 petals, lanceolate, length, 5 mm; androecium, polyandrous, inferior, with 10 stamens, arranged into circles of five each; smaller stamens, 4 mm. long whereas the longer ones, 5-6 mm; gynoecium, 5-6 mm long; stigma, bright, sticky; style, short; ovary, superior.

Correspondence
Beena Kumari
Department of Botany,
Hindu College, Moradabad,
Uttar Pradesh, India

Fruits, round to oblong, 1.4-1.6 cm long, 1-1.2 cm in diameter; fully ripe fruits, black with a very shining surface. Seed, one in each fruit, 11 mm long, 8 mm in diameter, colour spinach green to black (Fig.2 A, B, C, D).

Phenology

Flowering starts from the middle of April and ends in the middle of May. The fruiting season start from the middle of July to the end of August.

Reproduction

It reproduces the means of seeds which germinate freely under partial shade. Propagation by stem cuttings and air layering is also possible. Curry leaf is a hardy crop. It can be tolerating higher temperature but when the temperature falls down below 16°C the vegetative buds become dominant arresting new growth of the plant.

Ecology and Cultivation

The plant grows best in sub-tropical climates in sunny to semi-shaded locations, though they can sustain in other climates by moving pots to warm protected areas in winter and maintaining humid conditions in areas where summers are hot and dry. They are very frost sensitive. Soil needs to be enriched with lots of organic material and be well drained. Heavy clay with poor drainage is not suitable for cultivation of curry leaf.

Scientific Classification

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.
 Species: *Murraya koenigii* (L.) Spreng. (Curry leaf tree)

Material and Methods

The name Rohilkhand was given by Ahmad Shah Abdali in 1748. Rohilkhand is a region of north-western Uttar Pradesh state of India and the area consists of Bijnor, J. P. Nagar, Moradabad, Sambhal, Rampur, Budaun, Bareilly, Pilibhit and Shahjahanpur districts (Fig.1). Rohilkhand lies on the upper Ganges alluvial plain and has an area of about 25,000 km² (10,000 square miles). The climate of Rohilkhand Region is predominantly subtropical, but weather conditions change significantly with location and seasons.

Intensive field studies were carried out in a planned manner repeatedly in 9 districts of Rohilkhand region during 2016 to 2017 in order to get maximum representation of local people. Valuable information regarding ethnobotanical uses were collected on the bases of interview with experienced people of various communities and also consulting available literature [2, 8, 9].

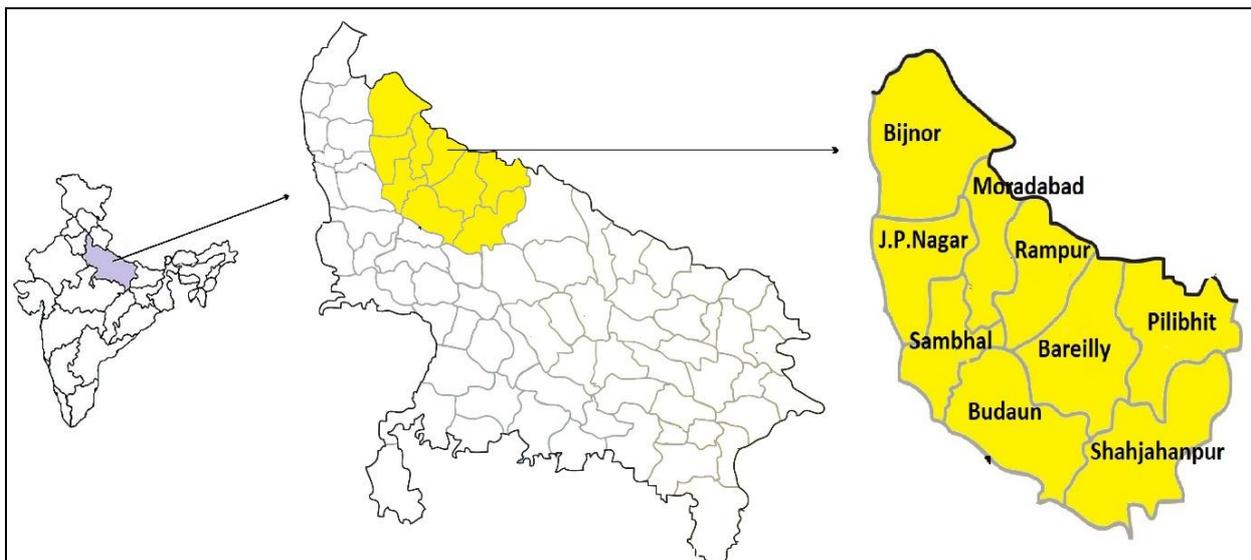


Fig 1: District map of Uttar Pradesh & Rohilkhand region.

Results and Discussion

The present communication is an effort to list various Ethnobotanical uses of *Murraya koenigii* in the study area.

1. Bark and roots are used as stimulant and externally to cure eruptions and bites of poisonous animals.
2. Juice of root of *Murraya koenigii* is taken orally to cure kidney pain. People also used this for preventing premature greying of hair.
3. Green Leaves are stated to be eaten raw for curing dysentery and diarrhoea, and the infusion of the washed leaves stops vomiting. *Murraya koenigii* were also used as blood purifier and tonic.
4. Fresh juice of curry leaves, with lime juice and sugar, is taken orally for the treatment of morning sickness, nausea and indigestion.

5. Curry leaf juice also used for treatment of renal diseases, or dropped into the eyes for the prevention of cataracts.
6. Leaves and roots are also used traditionally as curing piles, inflammation, itching and are useful in leukoderma and blood disorders.
7. The leaves are used to make tea to treat fever.
8. A paste made of curry leaves applied on burn, bruises, boils and skin eruption.
9. The leaf paste is applied on gums to avoid pieria.
10. A paste made of leaves of *M. koenigii* and *Psidium guajava* with flowers of *Catharanthus roseus* is taken to maintain sugar level.
11. Fresh leaves chewed to reduce the body weight gain is a common practice in the study area.



Fig 2: Morphology of *Murraya koenigii* (A- Whole plant, B- Flowers, C- Leaves, D- Fruits).

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