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ORIGINAL ARTICLE

In–Vitro Antifungal activity of Curry leaves (Murraya koenigii)

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Abstract

Murraya koenigii (L.) Spreng, commonly known as curry leaves, is a subtropical shrub belonging to the Rutaceae family, widely cultivated in India and other tropical regions for its aromatic leaves used in culinary applications. Beyond its culinary significance, M. koenigii is recognized for its rich medicinal properties, attributed to bioactive compounds such as carbazole alkaloids (e.g., mahanine, koenimbine, murrayazoline), flavonoids, phenolics, and essential oils (e.g., αpinene, caryophyllene). These compounds confer antioxidant, antibacterial, antifungal, anti-inflammatory, antidiabetic, and anticancer properties, making the plant a valuable candidate for pharmacological research. Despite its traditional use in Ayurveda and Siddha medicine for treating various ailments, including skin infections and digestive disorders, the antifungal potential of M. koenigii against plant pathogenic fungi like Marasmiellus cocophilus remains underexplored. This study aimed to evaluate the in vitro antifungal activity of M. koenigii leaf extract against Marasmiellus cocophilus, a significant plant pathogen, and to identify the phytochemicals contributing to its efficacy. The primary objective was to assess the antifungal efficacy of ethanolic M. koenigii leaf extract at concentrations of 10 mg/ml and 20 mg/ml against Marasmiellus cocophilus using the agar well diffusion method, comparing its performance to the standard antifungal drug itraconazole. Additionally, the study aimed to confirm the presence of bioactive compounds through phytochemical screening to elucidate their role in antifungal activity.

Key words: Murraya koenigii, Curry leaves, Carbazole alkaloids, Murrayazoline, Flavonoids, Phenolics, pinene, Anti-inflammatory, Antioxidant, Antibacterial, Agar well diffusion α method, Phytochemical screening

1 | INTRODUCTION

A green leafy vegetable, the curry leaf tree (Murraya Koenigii spreng) is cultivated throughout India and other nations for its fragrant leaves, which are frequently used as an ingredient in Indian cooking (1) . India is widely recognized for its vast medicinal plant biodiversity. Murraya koenigii is one of them; it has many bioactive components that have made it a medicinally significant plant, yet scientists have paid little to no attention to it. It is established that Murraya koenigii is a naturally occurring medicinal plant (2) . Because of its distinct flavor and scent, M. koenigii L. Spreng, a member of the Rutaceae family, is used as a spice in India. Because curry leaves include the antioxidants tocopherol, β-carotene, and lutein, they can be utilized as an antioxidant in diets that are heavy in fat (3) . Indian bay leaves are another name for leaves that resemble bay leaves in appearance but are somewhat smaller. These leaves' strong concentration of essential volatile oils, which are collected via the steam distillation method and are used to treat skin conditions, gives them their fragrant perfume (4–12) .

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Fig. 1: Curry leaves

Table 1. TAXONOMICAL DESCRIPTION

Kingdom	**Plantae**
Subkingdom	Tracheobionta
Superdivi-sion	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Rosidae
Family	Rutaceae
Genus	Murraya
Species	Murraya koenigii

Taxonomy of curry leaves

Table 4. DATA COLLECTION AND OBSERVATION TABLE

Sample	**Zone of Inhibition (mm)**
Curry Leaves Extract(10 mg/mL)	2 mm
Curry Leaves Extract(20 mg/mL)	6 mm
Itraconazole (10 mg/mL)	15 mm
Itraconazole (20 mg/mL)	19 mm

Zone of Inhibition of test and standards

Table 2. VERNACULAR NAMES

English	Curry leaves
Kannada	Karibevu
Hindi	Karipatta, Mitha nim
Tamil	Kariveppilai
Malay-alam	Kariveppu
Marathi	Kadhilimb
Sanskrit	Girinimba
Telugu	Karepeku
German	Curryblatter

Other names of Curry Leaves

Table 3. PHYTOCHEMICAL COMPOSITION OF CURRY LEAVES (Murraya Koenigii)

Phytochemicals	**Concentra-tion**
Alkaloids	343.34±0.25
Cyanogenic glycosides	11.08±0,32
Phenolics	1136.78±0.34
Saponins	0.03±0,01
Flavonoids	600.25±0.41
Tannins	206.05±7.5
Carotenoids	0.10±0.05

Phytochemicals Concentration of Murraya Koenigii

2 | MATERIAL AND METHODS

Materials Required:

- Dried powdered plant material (Curry leaves)
- Ethanol (analytical grade)
- Soxhlet apparatus (extractor, condenser, round-bottom flask)
- Heating mantle or water bath
- Whatman filter paper or thimble
- Weighing balance
- Glass beakers and storage containers

Procedure (13–21) :

3 | RESULT AND DISCUSSION:

The in vitro antifungal activity of curry leaves (Murraya Koenigii spreng) extract was evaluated against

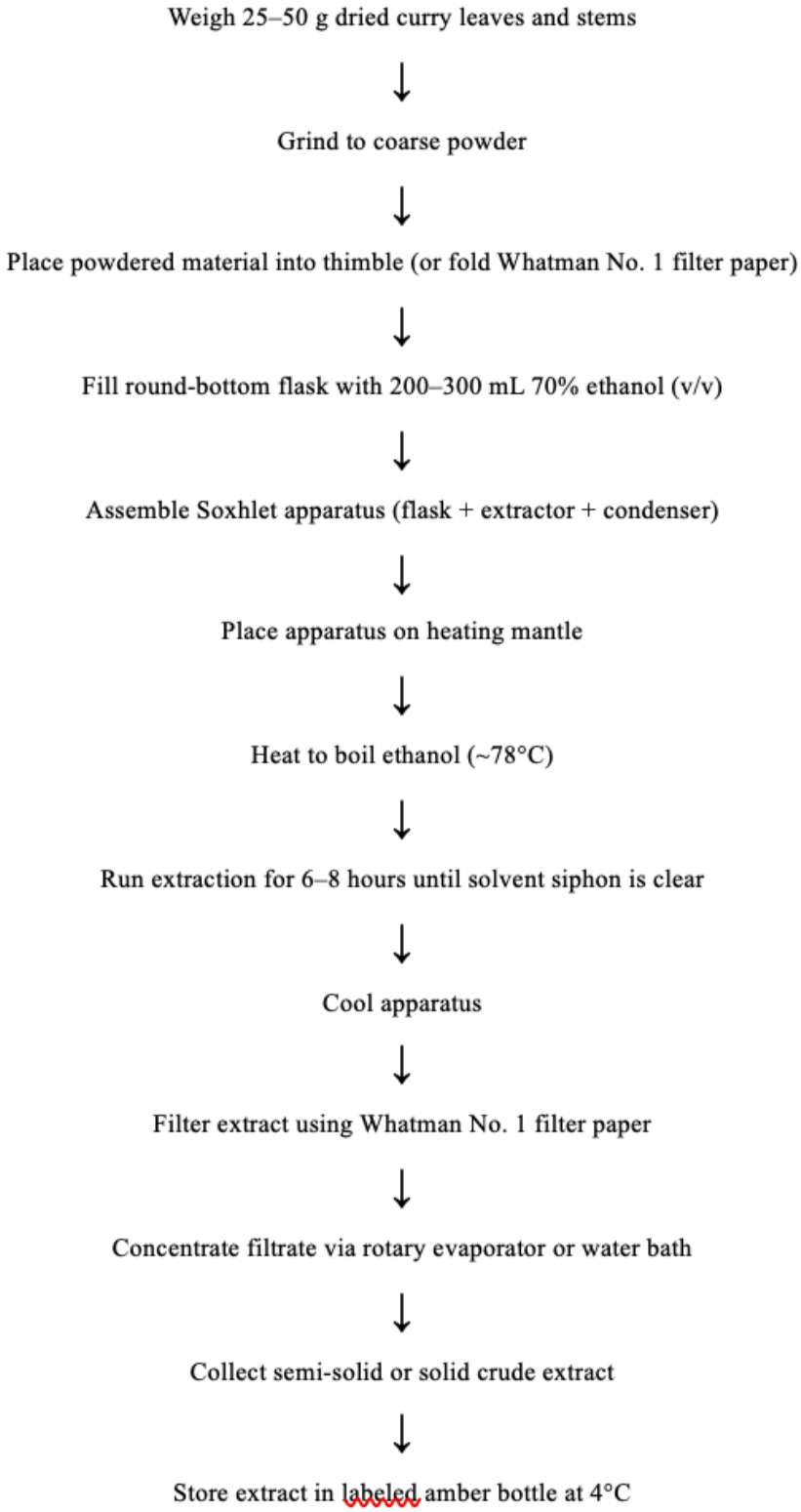

Fig. 2: Flow chat of Procedure

Marasmiellus cocophilus showed that the curry leaves (Murraya Koenigii spreng) extract exhibited significant antifungal activity, with minimum zones of inhibition. The higher concentration (20 mg/mL) showed more potent antifungal activity compared to the lower concentration (10 mg/mL). The positive control (Itraconazole) showed the highest zone of inhibition.

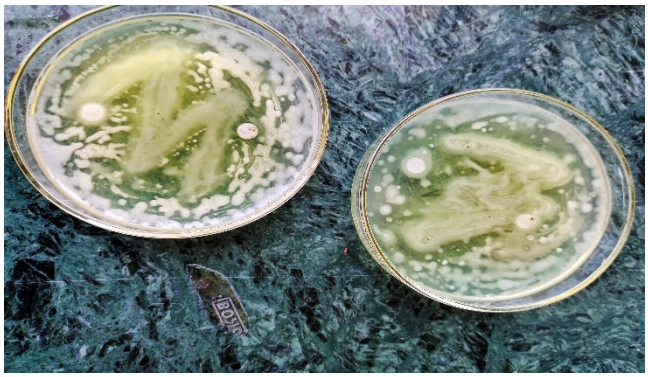

Fig. 3: Zone of inhibition

4 | CONCLUSION

The present study demonstrated the potential antifungal activity of a polyherbal extract composed of curry leaves (Murraya Koenigii spreng) against Marasmiellus cocophilus, a known plant pathogenic fungus. Using the agar well diffusion method, the extract showed concentration-dependent zones of inhibition, indicating effective suppression of fungal growth. The 20 mg/mL concentration exhibited a significantly larger inhibition zone compared to the 10 mg/mL, while the standard antifungal (Itraconazole) displayed the highest activity, and the solvent control showed no activity. Phytochemical screening confirmed the presence of various bioactive compounds such as alkaloids, flavonoids, tannins, terpenoids, phenols, saponins, and steroids, which likely contributed to the antifungal efficacy. These findings suggest that the herbal formulation holds promising antifungal potential, especially in eco-friendly plant disease management, and warrants further investigation into its active constituents, mechanism of action, and possible application in agricultural or pharmaceutical settings.

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