IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Antifungal Activity Of Kaidarya (Murraya Koenigii Linn.) Patra: An In Vitro Study

[1]Dr Priya V Kaladagi, [2] Dr. Shashidhar P. Naik, [3] Dr. Gaviraj E. N, [4]Dr Vidyalaxmi Pujari.
[1]Final year PG Scholar, [2]Professor and HOD, [3]Professor and HOD, [4]Associate Professor
[1]Department of PG studies in Dravyaguna Vijnana,
[2] Department of PG studies in Dravyaguna Vijnana,
[3]Dept. of Pharmacognosy,
[4]Department of PG studies in Dravyaguna Vijnana,
[1]BLDEA's AVS Ayurveda Mahavidyalaya, Vijayapura, India,
[2]BLDEA's AVS Ayurveda Mahavidyalaya, Vijayapura, India
[3]BLDEA'S SSM College Of Pharmacy & Research Centre, Vijayapura, India,
[4]BLDEA's AVS Ayurveda Mahavidyalaya, Vijayapura, India

ABSTRACT

Background and Objectives:
Kaidarya (*Murraya koenigii* Linn.) is an Ayurvedic medicinal plant traditionally described as *Krimighna*. The present study was undertaken to evaluate its pharmacognostical characteristics and *in vitro* antifungal activity.

Objectives:
To study the pharmacognostical parameters of Kaidarya patra and to evaluate its *in vitro* antifungal activity.

Materials and Methods:
Leaves of Kaidarya were collected, authenticated, and subjected to ethanolic extraction. Pharmacognostical evaluation, physicochemical analysis, preliminary phytochemical screening, TLC, and HPTLC were performed. Antifungal activity was assessed against *Candida albicans* and *Aspergillus niger* using the agar cup plate method.

Results:
Pharmacognostical and physicochemical parameters confirmed the authenticity and purity of the drug. Phytochemical screening revealed the presence of alkaloids, flavonoids, phenolic compounds, and tannins. TLC and HPTLC analysis confirmed the presence of flavonoids such as quercetin and kaempferol. The ethanolic extract exhibited significant antifungal activity at a concentration of 10,000 µg/mL.

Conclusion:
The study scientifically supports the traditional *Krimighna* property of Kaidarya.

Keywords: Kaidarya, *Murraya koenigii* Linn., Antifungal activity, Pharmacognosy, TLC, HPTLC

I. INTRODUCTION

Ayurveda, the ancient Indian system of medicine, offers a profound understanding of life and health through classical compendia such as the *Charaka Samhita* and *Sushruta Samhita*. These treatises serve as comprehensive encyclopedias of medicinal plants, describing botanicals with diverse pharmacodynamic actions. In recent years, herbal medicine has gained global prominence as a biocompatible and eco-friendly alternative to synthetic pharmaceuticals, which are often associated with high costs and adverse side effects.

The Global Burden of Fungal Infections

The modern era has seen a surge in lifestyle-associated disorders and infectious diseases, driven by environmental degradation, stress, and changing dietary patterns. Among these, fungal infections have emerged as a significant global health challenge.

- **Prevalence:** Nearly one billion people suffer from superficial fungal infections (skin, hair, and nails).
- **Severity:** Over 150 million individuals are affected by chronic fungal diseases that severely impair quality of life.
- **Aggravating Factors:** Immunocompromised states, environmental pollution, and the overuse of synthetic cosmetics have heightened the spread and recurrence of these infections.

The Ayurvedic Perspective: Krimighna Dravyas

In Ayurveda, the term **Krimi** is a broad concept encompassing both macro-organisms (helminths) and micro-organisms (bacteria, fungi, and viruses). To combat these, Ayurveda identifies a category of herbs known as ***Krimighna dravyas***, many of which are specifically indicated for ***Kustha*** (skin disorders). Given the rising drug resistance in allopathic antifungal therapies, these natural agents offer a promising, cost-effective resource for primary healthcare.

Kaidarya (Murraya koenigii Linn.)

Murraya koenigii (Linn.), commonly known as the curry leaf tree, is recognized in the *Raja Nighantu* for its *Krimighna* and *Kusthaghna* properties[1]. Beyond its culinary use, it is a potent medicinal plant containing carbazole alkaloids, flavonoids, and essential oils, which are known for antimicrobial and antioxidant activities.

Despite its traditional usage, scientific validation of the antifungal potential of Kaidarya remains limited. Therefore, the present study was undertaken to evaluate the *in vitro* antifungal activity of Kaidarya patra and to correlate the findings with its classical Ayurvedic properties.

II. MATERIALS AND METHODS

Fresh leaves of Kaidarya (Murraya koenigii Linn.) were collected and authenticated by the Department of Dravyaguna, BLDEA's AVS AMV College, Vijayapura. The leaves were washed, shade-dried, powdered, and stored in airtight containers.

Pharmacognostic evaluation and physicochemical analysis were carried out using standard pharmacopoeial methods[2]. Ethanolic extraction of the powdered leaves was performed, and the extract was concentrated under reduced pressure[3].

Preliminary phytochemical screening was conducted to identify major phytoconstituents[3]. Thin Layer Chromatography and High Performance Thin Layer Chromatography[4] were performed for chemical profiling following WHO guidelines.

The antifungal activity of the ethanolic extract was evaluated in vitro against Aspergillus niger and Candida albicans using the agar cup plate method on Sabouraud Dextrose Agar medium[5]. Nystatin was used as the standard drug. Zones of inhibition were measured to assess antifungal activity.

All experimental procedures were carried out at BLDEA's SSM College of Pharmacy, Vijayapura, under aseptic conditions.

III. RESULTS

Table 1. Organoleptic (Morphological) Characters of *Murraya koenigii* Linn.

Character	Observation
Physical appearance	Large shrub to small tree; pinnate leaves with 11–21 ovate-lanceolate, shiny leaflets
Colour	Root: dirty brown; Stem & leaf: dark green
Odour	Aromatic
Taste	Bitter
Touch	Root & stem: rough; Leaf: smooth

Table 2. Microscopic Characters of Kaidarya Leaf

Structure	**Observations**
Upper epidermis	Single layered, parenchymatous cells with cuticle and epidermal hairs
Mesophyll	Differentiated into palisade and spongy parenchyma with chloroplasts
Midrib	Collenchymatous cells with oil glands
Vascular bundles	Xylem and phloem surrounded by parenchyma
Lower epidermis	Stomata with guard cells; thin cuticle

Table 3. Physicochemical Parameters of Kaidarya Patra Powder

Parameter	Result
Moisture content (%)	3.5
Total ash (%)	10.1
Acid-insoluble ash (%)	1.712
Water-soluble ash (%)	5.17
pH	5.63
Foreign matter	Within API limits

Table 4. Preliminary Phytochemical Screening of Ethanolic Extract

Phytochemical Constituents	Result
Alkaloids	Present
Carbohydrates & Glycosides	Present
Flavonoids	Present
Phenols & Tannins	Present
Amino acids & Proteins	Present
Phytosterols	Absent
Saponins	Absent

Table 5. TLC Profile of Ethanolic Extract of Kaidarya

Spot No.	Colour	Rf value
1	Greenish-yellow	0.65
2	Greenish-yellow	0.72
3	Greenish-yellow	0.80

Table 6. In Vitro Antifungal Activity of Kaidarya Patra (Agar Cup Plate Method)

Sample	*Candida albicans* (mm)	*Aspergillus niger* (mm)
Nystatin (Standard)	21	18
Ethanolic extract (10,000 µg/ml)	18	15
Ethanolic extract (1,000 µg/ml)	Not significant	Not significant
Ethanolic extract (100 µg/ml)	No inhibition	No inhibition
Negative control	No inhibition	No inhibition

IV. DISCUSSION

The present study was undertaken to scientifically validate the traditional Krimighna property of Kaidarya (Murraya koenigii Linn.) patra through pharmacognostic, phytochemical, and in vitro antifungal evaluation. Classical Ayurvedic texts describe Kaidarya as useful in Krimi, Kustha, Dushta Vrana, and Kandu, which justified its selection for antifungal investigation.

Pharmacognostic evaluation confirmed the authenticity and purity of the plant material. Diagnostic macroscopic and microscopic characters such as oil glands, glandular trichomes, mesophyll tissues, vascular bundles, and stomata were observed, which are known sites for synthesis and storage of bioactive compounds. These findings were consistent with standard descriptions of plants belonging to the family Rutaceae.

Physicochemical parameters were found to be within acceptable limits, indicating good quality and stability of the drug. Low moisture content reduces the risk of microbial contamination, while ash values reflect minimal extraneous matter. The mildly acidic pH favours the stability of phenolic and flavonoid compounds, which are important contributors to antifungal activity.

Phytochemical screening revealed the presence of alkaloids, flavonoids, phenolic compounds, tannins, glycosides, amino acids, and proteins. These constituents are known to exert antifungal effects through inhibition of fungal cell wall synthesis, disruption of membrane integrity, enzyme inhibition, and protein precipitation. Chromatographic studies supported these findings, with TLC indicating multiple phytoconstituents and HPTLC confirming the presence of flavonoid markers such as quercetin and kaempferol.

In vitro antifungal evaluation showed that the ethanolic extract of Kaidarya patra exhibited significant antifungal activity at higher concentration against Candida albicans and Aspergillus niger. The activity was concentration dependent and comparatively higher against C. albicans, possibly due to differences in fungal cell wall structure and permeability. Although the activity was lower than the standard drug nystatin, the results indicate notable antifungal potential.

From an Ayurvedic perspective, the observed antifungal activity can be correlated with the Krimighna and Kusthaghna properties of Kaidarya, suggesting its role in eliminating microbial factors responsible for skin and mucocutaneous disorders. Thus, the present findings provide scientific support for the traditional use of Kaidarya in managing fungal infections.

V. CONCLUSION

The study confirms that Kaidarya (Murraya koenigii Linn.) leaves are authentic, of good quality, and possess significant antifungal activity. Pharmacognostic and physicochemical evaluations supported the purity of the drug. Phytochemical and chromatographic studies confirmed the presence of bioactive constituents, particularly flavonoids such as quercetin and kaempferol. The ethanolic extract showed notable in vitro antifungal activity against Candida albicans and Aspergillus niger, validating the traditional Ayurvedic claim of Kaidarya as a Krimighna dravya.

VI. ACKNOWLEDGMENT

I sincerely acknowledge my guide Dr. Shashidhar P. Naik, M.D. (Ayu.), Vice Principal, Professor and Head, Department of PG Studies in Dravyaguna and Dr Vidyalaxmi Pujari Associate Professor , BLDEA's AVS Ayurveda Mahavidyalaya, Vijayapura, for his guidance and support.

I also acknowledge Dr. Gaviraj E. N., Ph.D., Professor and Head, Department of Pharmacognosy, BLDEA's SSM College of Pharmacy, Vijayapura, for his co-guidance and technical support.

VII. REFERENCE

1) Dr. Indradeo Tripathi (ed), Raja Nighantu of Pandit Narahari, Varanasi, Chowkhamba Krishnadas Academy, page266

2) Ayurveda Pharmacopeia of India, Ministry of health and family welfare, Govt of India, New Delhi. Part I, Vol VI

3) Harborne 1998, Phytochemical Methods, 3rd ed., Ch. "Methods of Extraction and Isolation", page no.5-10

4) The international pharmacopoeia, 3rd ed. Geneva, World Health Organization. Vol. 1: Quality control methods for medicinal plant materials. World Health Organization 1998 ISBN 92 4 154510 0 (NLM Classification: QV 766) page no.35

5) Dr Pulok k Mukherjee - Quality control of herbal drugs An approach to evaluation of botanicals, ed.2002, 6th reprint 2018, published by business horizons New Delhi, page no-607