

PHYTOCHEMICAL ANALYSIS OF MURRAYA KOENIGII IN URBAN AND COASTAL AREA

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ABSTRACT: *Murraya koenigii*(Linn) is the plant which posses strong antioxidant properties and enhance the metabolism of body by reducing human stress and their by decreasing cell metabolism. This study analysis the phytochemical screening of phenol, flavonoids, saponins, Alkaloids, Terpenoids, Tannins, anthraquinones and reducing sugar content between Urban and coastal *Murraya koenigii*. Based on the study found that the Flavonoids, Phenol, Tannins, Saponins, Terpenoids, Reducing sugar and Alkaloids are present in both urban and coastal *Murraya koenigii* but the absence of Anthraquinones in both areas. The *Murraya koenigii* leaves which has the richest source of antioxidants such as alkaloids, Phenols, saponin and flavonoids in both areas.

Keywords: *Murraya koenigii*, Phytochemicals, Review

INTRODUCTION

Plants play a major role as sources of crude drug and are an integral part of the healthcare system of a significant portion of world population. There are several medicinal plants which are being widely used in the traditional systems of medicine world wide. *Murraya koenigii* which belongs to the Rutaceae family has great antioxidant activities which is commonly called as "Curry patta" or "mitha neem" consisting of 150 genera and 1600 species [1]. It is widely used in the flavouring agent as well as ethanobotanical and pharmacognosy of medicine [2-9]. The leaves of *M. koenigii*, called curry leaves, are commonly used for flavouring the Indian dishes as well as Natural antioxidants. Studied plant origin are important in health, food and preventive medicine. *Murraya koenigii* has antioxidant, antimicrobial, anti-inflammatory. Antimicrobial, mosquitocidal and vitamins like vitamin C, vitamin A, vitamin B, vitamin E are the significant source in *Murraya koenigii* [10-17]. The study describes the phytochemical analysis of *Murraya koenigii* in urban and coastal areas. Antioxidants has efficiency to scavenge the free radicals and thereby decreasing the oxidative stress. The phenol and flavonoids content is high in the aerial parts of the plants which increases the cell functioning. Antioxidant activity of *Murraya koenigii* is due to the high phenol content. Phenols are widely used as a cancer resistant. Plant leaf protection was chanced by the production of saponins. Which protect the plant against microbes and fungi. Saponin forms a soap like frothing to the plant species. Many biological activities and antibacterial effects have been reported for *Murraya koenigii* plant of tannins and flavonoids [18-20].

Plant Description –*Murraya koenigi*

Habit: Shrubs or small tree are up to 4mm tall.

Leaves: Leaves are arranged spirally, imparipinnate with 17-31 leaflets, stipules are absent. Leaflets are alternate, ovate to ovate lanceolate or orbicular, 2-5 cm. Glandular are dotted, base obtuse to rounded and slightly asymmetrical, apex notched, margin is entire or irregularly toothed (Adewunmi, *et al*; 2001).

Stem: Aerial, erect, branched.

Inflorescence: Cymose.

Flower: Bisexual, regular aromatic, pedicel is short, calyx are with tiny ovate teeth, petals are oblanceolate to oblong, 5-7mm long, glandular, white. Stamens are 10 in number, ovary is superior, stigma capitate.

Fruit: Ovoid to oblong, granular berries.

MATERIALS AND METHODS

Collection of plant materials

Murraya koenigii L. plants were collected from different locations of Thiruvananthapuram district. The sample was collected during the month of January from two different locale- Coastal and Urban areas, and the leaf samples were later estimated for different parameters.

Sample preparation

The leaves of *Murraya koenigii* L. were washed thoroughly 2-3 times with running tap water and once with sterile water, air dried under shade in 6-7 days, segregated and pulverized by mechanically pounding them using wooden mortar and pestle. The pulverized plant material was stored away from moisture.

PYTOCHEMICAL SCREENING

Active constituent in the plant extract of *Murraya koenigii* were identified and detected the standard methods Phytochemicals such as Phenols, Tannins, saponins, terpenoids, Anthraquinones, flavonoids and alkaloids were detected based on standard tests.

1. Test for phenol

To the 2ml of *Murraya koenigii* extract was taken in a test tube and add few drops of 1% ferric chloride in a test tube. Presence of phenol was confirmed by the appearance of green/blue/ bluish green/ brown/ brownish red colour.

2. Test for flavonoids

2 ml of *Murraya koenigii* leaf extract solution was taken in a test tube and 3 ml of diluted ammonia was added to the solution and add 1 ml concentrated sulphuric acid in to the solution. At time yellow colour appears detect the presence of flavonoids (Chang *et al.* 2002).

3. Test for tannins

About 0.5g of dried powder of *Murraya koenigii* plant sample was boiled in 4ml of water in a test tube and then filtered. Few drops of 0.1% Ferric chloride were added to observe brownish green or blue black colouration indicated of the presence of tannin.

4. Test for alkaloids

Dragendorff test : About 1g of dried powder of *Murraya koenigii* plant sample mixed with methanol and added diluted HCl to the residue. Mixed well and followed by filtrated collection was added with few drops of Dragendorff reagent at time yellowish white precipitate indicated of the presence of alkaloids.

5. Test for saponins

Powdered *Murraya koenigii* plant sample 0.5g was boiled by 10ml of distilled water and filtered, Get the filtrate 5ml was mixed with 2.5ml of distilled water and shaken vigorously for a stable, persistent frothing. Frothing was mixed with 3 drops of saturated oil and was vigorously shaken again. The emulsion formed indicated the presence of saponin (Makkar et al; 2002).

6. Test for terpenoids

3ml *Murraya koenigii* leaf extract dissolved in 1ml of chloroform in a test tube and added 1 ml of concentrated sulphuric acid in to the test tube then a intense red- brown will occur due to the presence of terpenoids.

7. Test for anthraquinones

2ml of *Murraya koenigii* extract was taken in a test tube and added 4 ml concentrated sulphuric acid in to the test tube boiled and shaken well and add 3ml of chloroform in to the test tube and the chloroform layer was separated and pipette out in to another test tube containing diluted ammonia .Appearance of pink red/ violet colour at the lower phase indicates the presence of anthraquinones.

8. Reduced Sugar

Take two test tube and add 0.2g of powdered *Murraya koenigii* plant sample to each test tube and 1ml ethanol was mixed with 2ml of distilled water. 1ml of Fehling's solution A and B was taken in a test tube and boiled. Then it poured in the aqueous ethanolic plant extract. Colour change determine the presence of reducing sugars.

Phytochemical analysis of Urban and coastal *Murraya koenigii*(Linn)

Phytochemical screening of the *Murraya koenigii* plant to determine the presence or absence of bioactive compounds was performed in this study. The results are given in table .

Phytochemical Test	Coastal	Urban
Phenols	+	+
Flavonoids	+	+
Tannins	+	+
Saponins	+	+
Terpenoids	+	+
Alkaloids	+	+
Anthraquinones	-	-
Reduced sugar	+	+

‘+’→Presence of phytochemicals

‘-’→Absence of phytochemicals

RESULT AND DISCUSSION

The present study found that the phytochemical analysis of *Murraya koenigii* results the presence of Alkaloids, Flavonoids, Phenols, Saponins, Tannins,Reducing sugars and Terpinoids and absence of Anthraquinones both in Urban and Coastal area. These antioxidants are reported by Rani *et al*; 1924[21-24] The ethno-botanical reports offer information on medicinal properties of *Murraya koenigii* like anti-diabetic (Kesari *et al.*, 2005), antihistaminic (Yamamura *et al.*, 1998), anti-carcinogenic (Kumar *et al.*, 2002), hypolipidemic (Khanna *et al.*, 2002) and possess anti-bacterial activity (Kubo *et al.*, 2004). The antioxidants plays a great role in medical aspects [25].Saponin helps to reduce cholesterol level and blood pressure. These are also regulate defensive mechanism in plants. Terpinoid plays an important role in wound and scar healing [26]. The antimicrobial activity of alkaloid from *Murraya koenigii* reported by Chowdhary *et al.*,2001 and antioxidant activity of alkaloid reported by Tachibana *et al.*,2003. *Murraya koenigii* leaf extracts possess activity against some bacteria and fungi, it can be effective antimicrobial agent to treat numerous diseases discussed in Ziyat *et al.*, 1997. The present study reveal that *Murraya koenigii* constitute significant amount of antioxidant properties. Much of the protective effect of *Murraya koenigii* leaves have been attributed to phytochemicals such as Flavonoids, phenols.

CONCLUSION

The present study the phytochemicals analysis of *Murraya koenigii* leaf extract in coastal and urban areas is rich source of Phenolics, flavonoid, saponins, terpenoids, tannins and alkaloids.These phytochemicals properties of *Murraya koenigii* can be included in various fields of sectors. These elements can be useful for the reduction of tissue damage,inflammation reduction of oxidative stress and there by enhancing the cell metabolism. The metabolites are reported to have many biological and therapeutic properties so it is expected to have high potential for medical uses.

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