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A Comparative Study on Phytochemical Analysis of *Murraya Koenigii* and *Manilkara Zapota*

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ABSTRACT

A natural product either as pure compounds or as plant extracts has enormous application in drug design. Phytochemical constituents of selected ethanolic, methanolic, chloroform and benzene extracts of *Murrya koenigii* and *Manilkara zapota* were qualitatively analyzed and were compared. *M.zapota* contained more phytochemical compounds in its extracts than *M.koenigii*. Phenol, cardiac glycoside and carbonyl compounds were present in rich amount in both the plant extracts. Terpenoids were rich in *M.koenigii* whereas *M.zapota* contained glycoside. Coumerin was present in fewer amounts in both the plant extracts.

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INTRODUCTION

Plants play a vital role in human life. They provide various nutraceuticals that are exploited in the pharmaceutics and cosmetic industry. Man uses plants to meet his basic needs such as for food, clothing and shelter. In addition, wild plants are the sources of income and employment to the rural population and tribal community as a rich source of minor forest produce [1]. Important herbal products are spices, herbal teas, functional food ingredients, medicinal raw materials, aromatic plants, essential oils, flavoring, fragrant products and dietary supplements. The traditional medicine literature describes the potential role of plant as a source of many vitamins and a domestic remedy for many disorders like diabetes, cancer, arthritis and many others [2].

Murraya Koenigii, belongs to the family Rutaceae, commonly known as curry leaf tree. It is a native of India, Sri Lanka and other south Asian countries. These are found almost everywhere in the Indian subcontinent, the leaves are rich in aroma. The plants are more or less deciduous shrub or tree growing up to 6 m in height and 15-40 cm in diameter with short trunk, thin smooth grey or brown bark and dense shady crown [3]. Leaves of *M. koenigii* were proved to possess significant wound healing capacity [4] and memory improving effect [5]**,** *M. koenigii* showed antioxidant activity. It also showed a high degree of radical-scavenging properties [6]. Mosquitocidal, antimicrobial and exhibited topoisomerase I and II inhibition activities [7].

Manilkara zapota (Sapotaceae) is locally known as sapota in tamil. This plant has antioxidative property [8] and its fruit is used for preventing biliousness and attacks of fever whereas seeds are diuretic [9]. Chlroform and ethanolic extracts of *Murraya* were tested for fungi control in *Manilkara zapota* [10]. In this present study, Phytochemical constituents of *Murraya Koenigii* and *Manilkara zapota* were compared qualitatively.

MATERIALS AND METHODS

Collection of Sample

Leaves of *M.koenigii* and *M.zapota* were collected from the Madambakkam village, Chennai, Tamil Nadu. Then they were dried under sun light for three days. After complete drying, it was made as a fine powder using mixer and was stored.

Preparation of Plant Extract

The powdered leaf samples were soaked in solvents such as benzene, acetone, ethanol and methanol for 48 hours and the extracts were separated out using whatman filter paper.

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Phytochemical Analysis of Leaf Extract of Plant

Salkowski Test for Terpenoids and Triterpenoids

Few drops of conc sulphuric acid was added to 2 ml of extract. Then it was shaken well and left it for some time. Appearance of red color indicates the presence of steroids and yellow color indicates the presence of triterpenoid.

Test for Phenol

To the 2ml of extracts, few drops of ferric chloride were added. Presence of phenol was confirmed by the appearance of green/blue/ bluish green/ brown/ brownish red color.

Test for Flavanoid

Three ml of distilled water was added to two ml of sample and filtered.Then 10% ferric chloride is added to this filterate. Appearance of greenish blue/ violet color confirms the flavanoids.

Neutral Ferric chloride Test for Tannins

Few drops of 0.1% ferricchloride was added to 2ml plant extracts. Appearance of blue/ black/ bluish green preicipitate indicates the presence of tannins.

Ninhydrin test for Aminoacid

Few drops of ninhydrin was added to the two of extract. Color changed from blue to pink confirms the aminoacid.

Sodium bicarbonate test for Carboxylic acid

Sodium bicarbonate was added to two ml of plant extract. Formation of brisk effervescence confirms the presence of carboxylic acid.

Molisch's Test for Glycoside

Two ml of sample was treated with 2-3 drops of α-napthol and few drops of concentrated sulfuric acid. Appearance of red brown/ violet ring confirms the presence of glycoside.

Keller-Killani test for Cardiac glycoside

Few drops of glacial acetic acid and 2-3 drops of ferric chloride were added to two ml of extract along with 1ml of concentrated sulfuric acid. Appearance of brown ring at the interface confirms the cardiac glycoside.

Borntrager's test for Anthraquinone

Two ml of extract was mixed with 10% of 5ml ammonia. Appearance of pink red/ violet color at the lower phase indicates the presence of anthraquinone.

Test for Carbonyl group

2 ml Plant extracts were treated with 2-3 drops of 2,4 diphenyl hydrazine. Then it was shaken well. Appearance of yellow crystals confirms the presence of carbonyl groups.

Test for Saponin

To the 2ml of plant extract, 5 ml distilled water was added and boiled with vigorous mixing. Saponin was confirmed by the froth formation.

Test for Coumarin

Plant extracts were reacted with 1N NaOH or KOH. Appearance of dark yellow color confirms the presence of coumarin.

Test for Phlobatanin

Distilled water was added to the extract and then filtered. Filtrate was boiled with 2% HCl. Presence of Red precipitate confirms the phlobatanin.

RESULTS AND DISCUSSION

Studies on the medicinal plants are most important. Because it helps in developing newer drugs and its development. Green plants are the important source of chemicals. Different phytochemicals have been found to possess a wide range of activities, which may help in protection against chronic diseases. Alkaloids protect against chronic disease [11]**.** In this study, the results showed that phytochemical constituents of leaf extracts of *M.koenigii* and *M.zapota.*

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Table.1 A Qualitative Phytochemical analysis of *Murraya koenigii* (MK) and *Manilkara zapota* (MZ)

S.No	Plant constituents	Inference							
		Methanol		Ethanol		Chloroform		Benzene	
		MK	MZ	MK	MZ	MK	MZ	MK	MZ
1	Steroid	-	++	-	+	-	+	-	+
2	Triterpenoids	-	+	-	+	-	+	+++	+
3	Terpenoids	+++	-	++	-	++	-	++	-
4	Phenol	++	++	++	++	++	++	++	++
5	Flavanoid	++	--	+	-	+	-	+	-
6	Coumarin	+	+	+	+	+	+	+	+
7	Tannin	-	+	-	+	-	+	-	+
8	Phlobatanin	-	-	-	-	-	-	-	-
9	Aminoacid	-	-	-	-	-	-	-	-
10	Carboxylic acid	-	-	-	-	-	-	-	-
11	Glycoside	-	++	-	++	-	++	-	++
12	Cardiac glycoside	+++	++	+++	++	+++	++	+++	++
13	Carbonyl	+++	++	+++	++	+++	++	+++	++
14	Saponins	-	-	-	-	-	-	-	-
15	Anthraquinone	+	-	+	-	+	-	+	-

(Highly Prominent= +++; Medium amount= ++; Fewer amount= +; Absent= -)

Both the extracts were showed positive result for the phenol, coumerin, carbonyl compounds and cardiac glycoside. Carbonyl compounds and cardiac glycoside were present prominently in both the extracts. Phenol was found to be medium amount in both extracts. But triterpenoids were present in small amount in three extracts of *M.zapota* and was found to be more in benzene extract. But it was absent in all the three extract except benzene extracts of *M.koenigii*. All the extracts of *M.zapota* and benzene extract of *Murraya koenigii* showed positive result for the terpenoids. Flavanoids were present only in the four extracts of *M.koenigii* but in fewer amounts. Tannins bind to proline rich proteins and interfere with the protein synthesis [12]. *M.zapota* has tannin in all extracts but it was absent in *M.koenigii*. Phlobatanin, aminoacid, carboxylic acid and saponins were absent in both the plant extracts. Extracts of *M.koenigii* showed positive result for saponins.

CONCLUSION

Screening for phytochemicals of two plants study showed that the presence of bioactive compounds but differs from one to another. Till other parts of these plants such as seeds, leaves and seed oil which are documented to possess important medicinal properties, are not defined scientifically for their biological potential. In future study, the isolated principles from *M.koenigii* and *M.zapota* needs to be evaluated in scientific manner to understand exact molecular mechanism of action.

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