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Phytochemicals Investigation of *Ficus glomerata* Linn Leaves

A Poongothai¹, KP Sreena¹, KM Saradhadevi¹, R Santhi*², S Annapoorani³

¹Research Scholars, ²Assistant Professor in Biotechnology, ³Professor in Biochemistry,
^{1&3}Avinashilingam Deemed University for Women, Coimbatore – 43.

²Dr GRD College of Science, Coimbatore-14, Tamil nadu, India.

ABSTRACT

The traditional medicine involves the use of different plant extracts or the bioactive constituents. This type of study provides the health application at affordable cost. The study such as ethno medicine keenly represents one of the best avenues in searching new economic plants for medicine. To find out the phytochemical constituents in the *Ficus glomerata* leaves. The leaves were of *Ficus glomerata* collected from the Coimbatore, Tamilnadu, were shadow dried and they were extracted with benzene, chloroform, ethanol, ethyl acetate, methanol, and petroleum ether. Phytochemical screening was carried out according to standard procedures. Sugar, protein, Alkaloids, flavonoids, sterols and glycoside were found to be present in the extracts.

Key words: *Ficus glomerata*, DMSO, phytochemical, traditional medicine.

***Corresponding author**

Email:santhiakash@yahoo.com

INTRODUCTION

Phytochemicals may protect human from a host of diseases. Phytochemicals are non-nutritive plant chemicals that have protective or disease preventive properties. Plant produces these chemicals to protect itself but recent research demonstrates that many phytochemicals can protect humans against diseases. There are many phytochemicals in fruits and herbs and each works differently. *Ficus glomerata* Linn is a large deciduous tree distributed throughout India particularly in evergreen forests and moist localities. Roots, barks, leaves, fruits and galls are part of tree used for therapeutic activity. Bark, leaves and unripe fruit are carminative, astringent, stomachic and vermicide [1].

Ficus glomerata belonging to family Urticaceae is known to possess astringent activity. It is used in dental preparations. In all parts are medicinally important in traditional system of medicine in India and have been used extensively in biliary disorders, jaundice, dysentery, diabetes, and diarrhea and in inflammatory conditions [2]. Experimental studies have demonstrated the anti-inflammatory, hepatoprotective, hypoglycemic and hypolipidemic effects of *Ficus glomerata* [3-5]. Hence the present study has been made to investigate the phytochemical screening of the *Ficus glomerata* leaves.

MATERIALS AND METHODS

Collection of plant materials

Ficus glomerata leaves were collected from Coimbatore district, Tamil Nadu. They were washed with tap water, rinsed with distilled water and blotted gently between the folds of filter paper.

Preparation of extracts

Benzene, Chloroform, Ethanol, Ethyl acetate, Methanol, and Petroleum ether extracts of leaves of *Ficus glomerata* were prepared in 20g/200 ml. The solvents of organic extracts were dried at 60°C with protection from light. The residue was weighed and dissolved in a known volume of dimethyl sulphoxide (DMSO). DMSO was maintained at a minimum concentration to avoid DMSO – induced events. These extracts were used for the detection of phytochemical analysis.

Screening procedure

Test for Alkaloids

Five ml of the extract was added to 2 ml of HCl. To this acidic medium, 1 ml of Dragendroff's reagent was added. An orange or red precipitate produced immediately indicates the presence of alkaloids.



Test for Amino acids

One ml of the extract was treated with few drops of Ninhydrin reagent. Appearance of purple colour shows the presence of amino acids.

Test for Anthraquinones

Five ml of the extract solution was hydrolysed with diluted Conc. H_2SO_4 extracted with benzene. 1 ml of dilute ammonia was added to it. Rose pink coloration suggested the positive response for anthraquinones.

Test for Flavonoids

To one ml of the extract, a few drops of dilute sodium hydroxide was added. An intense yellow colour was produced in the plant extract, which become colourless on addition of a few drops of dilute acid indicates the presence of flavonoids.

Test for Glycosides

The extract was hydrolysed with HCl for few hours on a water bath. To the hydrolysate, 1ml of pyridine was added and a few drops of sodium nitroprusside solutions were added and then it was made alkaline with sodium hydroxide solution. Appearance of pink to red colour shows the presence of glycosides.

Test for Saponins

The extract was diluted with 20 ml of distilled water and it was agitated in a graduated cylinder for 15 minutes. The formation of 1cm layer of foam showed the presence of saponins.

Test for Steroids

One ml of the extracts was dissolved in 10 ml of chloroform and equal volume of concentrated sulphuric acid was added by sides of the test tube. The upper layer turns red and sulphuric acid layer showed yellow with green fluorescence. This indicated the presence of steroids.

Test for Tannins

To five ml of the extract a few drops of 1% lead acetate were added. A yellow precipitate was formed, indicates the presence of tannins.

Test for Triterpenoids

Ten mg of the extract was dissolved in 1 ml of chloroform; 1 ml of acetic anhydride was added following the addition of 2 ml of Conc.H₂SO₄. Formation of reddish violet colour indicates the presence of triterpenoids.

RESULTS

In the present investigation, preliminary phytochemical screening has been done in the various extracts of *Ficus glomerata* leaves showed the presence of phytochemical constituent's namely alkaloids, carbohydrates, flavonoids, glycosides, saponins, steroids, tannins, phenols, triterpenoid, fixed oils and fats and the absence of anthraquinones, and aminoacids (Table 1).

Table 1: The analysis of phytochemicals in the various extracts of *Ficus glomerata* leaves

Phytochemicals	Inference					
	B	C	E	EA	M	PE
Amino acids	-	-	-	-	-	-
Anthraquinones	-	-	-	-	-	-
Alkaloids	+	+	+	+	+	+
Carbohydrates	+	+	+	+	+	+
Flavonoids	+	+	+	+	+	+
Glycosides	+	+	+	-	-	+
Saponins	+	-	-	+	+	+
Steroids	+	+	+	+	+	+
Tannins	-	-	+	+	+	+
Triterpenoids	+	-	+	-	-	-
Phenols	+	+	+	+	+	-
Fixed oils and fats	-	-	+	-	-	+

+ = presence; - = absence; B= Benzene; C= Chloroform; E= Ethanol; EA= Ethyl acetate; M= Methanol; PE= petroleum ether.

DISCUSSION

Herbal extracts contain different phytochemicals with biological activity that can be of valuable therapeutic index. Much of the protective effect of fruits and vegetables has been attributed by phytochemicals, which are the non-nutrient plant compounds. Different phytochemicals have been found to possess a wide range of activities, which may help in protection against chronic diseases. For example, glycosides, saponins, flavonoids, tannins and alkaloids have hypoglycemic activities, anti-inflammatory activities [6]. [7] reported that saponins possess hypocholesterolemic and antidiabetic properties. The terpenoids have also been shown to decrease blood sugar level in animal studies [8]. Steroids, triterpenoids and saponins showed the analgesic properties and central nervous system activities [9-11].

CONCLUSION

Since the study was conducted in a controlled manner, the phytochemical results can be used for the standardization of the above mentioned drugs. A preliminary screening and more research has to be undertaken to explore the wonderful therapeutic properties of these medicines. To conclude the present study, we have found that most of the biologically active phytochemicals were present in the ethanolic extract of *Ficus glomerata* leaves.

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