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# PRELIMINARY PHYTOCHEMICAL EVALUATION OF LEAF EXTRACTS OF *EUPHORBIA HIRTA, SYZYGIUM CUMINI* OF SIDDARABETTA, TUMKUR DISTRICT, KARNATAKA.

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## ABSTRACT

Phytochemicals are secondary metabolites in one or more parts of the medicinal plants. These have the ability to produce a definite physiological action on the human body. Medicinal herbs are the local heritage with global importance. Medicinal herbs have curative properties due to the presence of various complex chemical substances of different composition which are found as secondary metabolites in one or more parts of the plants. Keeping this view in mind the present investigation was carried out in Syzygium cumini stem, bark and Euphorbia hirta plants collected from Siddarabetta, Tumkur district. Karnataka, India. Qualitative phytochemical analysis of these plants confirms the presence of various phytochemicals like alkaloids, flavonoids, tannins, saponins, terpenoids and Quinone. The bioactive compounds from different solvent extracts suspected of anti-diabetic properties.

## KEYWORDS

Ethnomedicine, Syzygium cumini, Euphorbia hirta, Phytochemical Analysis, Siddarabetta, Antidiabetic Properties,

## INTRODUCTION

Herbal medicine or phytomedicine refers to the use of any plant seeds, berries, roots, leaves, bark or flowers for medicinal purposes [13]. Plants are used medicinally in different countries and are a source of many potent and powerful drugs[1, 4,6,14]. Herbal medicines are promising choice over modern synthetic drugs. They show minimum or no side effects and are considered to be safe. Generally herbal formulation involves the use of fresh or dried plant parts. Knowledge of such crude drugs is very important aspect in preparation, safety and efficacy of the herbal product. Pharmacognosy is a simple and reliable tool, by which complete information of the crude drug can be obtained[4, 6,13,14]. Phytochemicals may protect human from various diseases. Phytochemicals are non-nutritive plant chemicals that have protective or disease preventive properties. Phytochemicals are basically divided into two groups that are primary and secondary metabolites according to their functions in plant metabolism. Primary metabolites comprise of common sugars, amino acids, proteins and chlorophyll while secondary metabolites consist of alkaloids, flavonoids, tannins and so on[1, 2].

*Syzygium cumini*: (family Myrtaceae), commonly known as Jaman (Hindi), is a medicinal plant and utilizable species. Common names are Java plum, Black plum, Jambul and Indian Blackberry[1, 2].

The original home of jamun is India, distributed throughout India, in the forest up to 1800m usually along the bank and moist localities. The seeds are sweet, astringent to bowels and good for diabetes.

*Euphorbia hirta*: is a medicinal, rhizomatous herb distributed in Southern Western Ghats of India. The plant is native to India but is a pan tropical weed, found especially on roadsides and wasteland.

Ethnobotanical survey of these plants reveals anti-diabetic effects, although reliable research required and not yet been performed[10]. The present study was designed to explore the preliminary phytochemical analysis of *Euphorbia hirta, Syzygium cumini* stem bark for their pharmacological properties.

## MATERIALS AND METHODS

### *Plant Materials*

The fully matured leaves of *Euphorbia hirta, Syzygium cumini stem bark* was collected from Siddarabetta, Tumkur district. Karnataka, India. During September 2011 and were washed thoroughly and shade dried.

### *Extraction of Plant Material*

The dried plants and stem bark were ground into a fine powder and the total mass was subjected to extraction by a hot percolation method with water, ethanol and Methanol in soxhlet apparatus for 72 hrs. Each solvent extraction step was carried out for 24 hrs. After extraction the extracts were concentrated by evaporation and stored at 4°C for further study[3].

### *Preliminary Phytochemical Screening*

The phytochemical screening of the extracts was done using standard procedures [3]. The

following qualitative tests were carried out as follows.

1) Steroids and Terpenoids

10mg of the extract was dissolved in chloroform. Few drops of acetic anhydride were added followed by 1 ml of conc Sulphuric acid. The blue colour on the chloroform layer which changes to green shows the presence of steroids, whereas the appearance of pink colour in chloroform layer shows the presence of terpenoids.

2) Alkaloids

10mg of the extract was dissolved in conc HCL and filtered. A few drops of solution are poured into the center of watch glass. Mayer reagent is added along the sides of the watch glass with the help of a glass rod. Formation of a gelatinous white precipitate at the junction of two liquid shows the presence of alkaloids.

3) Flavonoids

10mg of the extract was dissolved in methanol. Magnesium turnings were added into this followed by conc HCL. A magneta colour shows the presence of Flavonoids.

4) Coumarins

10mg of the extract is dissolved in methanol and alcoholic KOH was added. The appearance of yellow colour which decolorizes while adding conc HCL shows the presence of Coumarin.

5) Saponins

The extract was dissolved in water and shaken well. Froth which last for a long time shows the presence of saponins

6) Tannins

10 mg of the extract was boiled with 1 ml water for 30 min. The extract is filtered clear and to this 0.5 ml 2% gelatin was added. A curdy white precipitate indicates the presence of tannin.

7) Phenolic compounds

The extract was dissolved in alcohol and 1 drop of neutral ferric chloride was added to this. The intense colour indicates the presence of phenolic compound.

8) Anthraquinone

To the extract Magnesium Acetate solution was added the pink colour developed indicates the presence of Anthraquinone.

9) Quinone

Few mg of the substrate in alcohol is treated with sulphuric acid. The colour developed indicates the presence of Quinone.

10) Catechin

Few mg of the substrate in alcohol is treated with a few drops of Ehrlish reagent and a few drops of concentrated HCl. The pink colour developed indicates the presence of catechin.

## RESULTS

The present study was carried out on the plant samples revealed the presence of medicinally important bioactive compounds. The plant *Euphorbia hirta* shows steroids, terpenoids, saponnins, tannins, phenol, quinone from different solvent extract (Table 1) whereas *Syzygium cumini* comprises of terpenoids, alkaloids, flavonoids, saponnins, tannins, phenol, quinone and catechin from different solvent extracts. (Table 1)

## DISCUSSION

The phytochemical analysis of *Euphorbia hirta* exhibit phenol tannins and quinone in all the three solvents. Methanol and ethanol extract reveals tannins and absent in water extracts. Saponins, flavonoids, terpenoids appeared only in water extract whereas steroids only in ethanol extract. No source of coumarins and catechin found in any of the solvent extract. *Syzygium cumini* were rich in catechin quinone and phenol noticed in all the three solvent extracts, whereas saponins and tannins noticed in methanol and ethanol extract, methanol and water extract exhibit flavonoids, terpenoids and alkaloids present only in ethanol extract. There is no

source of steroids anthraquinone and coumarins from all three solvent extract.

The present study suggests the bioactive compounds can be used for future studies and ethnobotonical survey reveals the usage of these plant extracts in treating diabetes mellitus. Further investigations are planned to conduct animal experiments to know the potency of bioactive compounds against diabetes mellitus.

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**Table: 1**
***Phytochemical screening***

| Phyto compounds | Euphorbia hirta, | | | Syzygium cumini | | |
|---|---|---|---|---|---|---|
| | W | E | M | W | E | M |
| Steroids | - | + | - | - | - | - |
| Terpenoids | + | - | - | - | + | - |
| Alkaloids | - | - | - | - | + | - |
| Flavanoids | + | - | - | + | - | + |
| Coumarins | - | - | - | - | - | - |
| Saponnins | + | - | - | - | + | + |
| Tannins | - | + | + | - | + | + |
| Phenol | + | + | + | + | + | + |
| Anthraquinone | - | - | - | - | - | - |
| Quinone | + | + | + | + | + | + |
| Catechin | - | - | - | + | + | + |

***W=water extract, E=Ethanol extract, M=Methanol extract***

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