



Research Article

PRELIMINARY PHYTOCHEMICAL SCREENING OF DIFFERENT SOLVENT MEDIATED MEDICINAL PLANT EXTRACTS EVALUATED

Thilagavathi.T, Arvindganth.R, Vidhya.D, Dhivya .R

Department of Biotechnology, VELS University Pallavaram, Chennai, India

*Corresponding Author Email: thilagavathi228@g.mil.com

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ABSTRACT

Medicinal plants have bioactive compounds which are used to curing of various diseases. In this present investigation involves five different medicinal plants *Clerodendrum inerme*, *Dennotia tripetala*, *Pongamia glabra*, *O. Sanctum*, *Abutilon indicum* L. were studied. four different solvents Viz. Acetone, methanol, hexane, chloroform were used to obtain extracts from produced plant leaves. The extracts were subjected to qualitative phytochemical screening using standard procedure. Phytochemical screening reveals the presences of Alkaloids, Saponins, Tannins, Steroids, Glycosides and Flavonoids.

KEYWORDS: Phytochemical analysis, Medicinal plants, leaves, Primary and Secondary constituents.

INTRODUCTION

Medicinal and aromatic plants are potential source of raw materials used for manufacture of drugs and perfumery products more than a quarter of all the medicines used in the world today contain natural compounds derived from plants that often serve lead molecules whose activities can be enhanced by manipulation through combinations with chemicals and by synthetic chemistry that can be exploited in the field of new drugs research and development.^{1,2} The primary benefits of using plants derived medicines are that they are relatively safer than synthetic alternatives offering profound therapeutic benefits and more affordable treatment.⁵

Phyto constituents are the natural bioactive compounds found in plants. This phyto constituents work with nutrients and fibers to form an integrated part of defense system against various diseases and stress conditions.³ Phyto chemicals are basically divided into two groups, i.e. primary and secondary constituents; according to their functions in plant metabolism. Primary constituents comprises common sugars, amino acid, proteins and chlorophyll while secondary constituents consists of alkaloids, terpenoid, steroids and flavonoids, so on. The present study revealed the qualitative phyto chemistry of seven medicinal plants used by the peoples of Amravati district (MS) India, to cure various ailments.

MATERIALS AND METHODS

Collection and identification of plant

The *Clerodendrum inerme*, *Pongamia glabra*, *Sanctum*, *Pennetia tripetala*, *Abutilon indicum* plant leaves was collected from Thanjavur, Tamilnadu. The plant was confirmed by Dr. Kathiravan Assistant Professor, Department of Biotechnology VELS University, Pallavaram, Chennai, India. HB. NO. VUBT: 1001.

Preparation of plant extracts

The fresh plant sample (leaves) were collected and washed under the running tap water to remove soil particles and other dust particles. The leaves were air dried under the laboratory condition at

room temperature for 15days. The dried leaves samples were ground well in to a fine powder with the help of mixer grinder.

A 10gm air dry plant was soaked into 50ml organic solvents.viz, Methanol, Chloroform and Hexane, Acetone, separately for 24hrs in a orbital shaker at normal temperature. The extracts were filter through the Whatman No:1 filter paper. The extract was allowed to dry using rotary evaporator. The condensed extracts were stored in airtight container at 4⁰C till further investigation.

Solvents used

Chloroform and Hexane, Acetone, Methanol, were used as the solvents for the preparations of plant extracts.

Phytochemical Analysis

Phytochemical screening was performed to identify phytochemicals in the chloroform and hexane, Methnal, Acetone, extracts of plant leaves were used in the study in this present work, the phytochemicals were detected by colour tests.

Test for alkaloids

Of each extract 2ml was acidified with a few drops of dilute hydrochloric acid. Then 1ml of Dragendorff's reagent was added. The appearance of orange to red precipitate indicates the presence of alkaloids.

Test for tannins

To 2ml of each extract a few drops of 10% lead acetate were added. The appearance of white precipitate indicates the presence of tannins.

Test for saponins

To 1ml of extract taken in a measuring jar, 9ml of distilled water was added and shaken vigorously for 15seconds and extract were

allowed to stand for 10min. Formation of stable foam(1cm) indicates the presence of saponins.

Test for steroids

Chloroform 10ml was added to 2ml of all three plant extracts. To these extracts 1ml of acetic anhydride was added and then 2ml of concentrated sulphuric acid was added along the sides of the test tube. Colour formation at the junction is noted. The appearance of blue green colour indicates the presence of steroids.

Test for Triterpenoids

The test for Triterpenoids is same as that for steroids the appearance of red, pink colour or violet colour at the junction indicates the presence of Triterpenoids.

Test for glycosides

To 1ml of each extract a few drops of glacial acetic acid and ferric chloride and 3-4 drops of concentration sulphuric acid were added.

The appearance of blue-green colour indicates the presence of glycosides.

Test for flavonoid

4ml of extract solution was treated with 1.5ml of methanol solution. The solution was warmed and metal magnesium was added to this solution 5-6 drops of Con. HCl acid were added and colour was observed for flavonoids and orange colour for flavones.

Test for reducing sugar

To 0.5ml of extract solution, 1ml of water and 5-8 drops of Fehling’s solution was added to the test tube hot and observed for brick red precipitate.

RESULTS AND DISCUSSION

The phytochemical test was done by various plant extracts with four different solvents acetone, methanol and hexane chloroform were done by colour test. The results were presented in following the Tables.

Table 1: Phytochemical test carried out the *Clerodendrum inerme* plant extract in four solvent

Phytochemical Testes	Acetone	Methanol	Hexane	Chloroform
Alkaloids	+	+	+	+
Tannins	+	+	+	+
Saponins	+	+	-	+
Steroids	+	+	+	-
Triterpenoids	-	+	+	-
Glycosides	+	+	-	+
Flavonoids	+	+	+	+
Reducing sugar	+	+	+	+

(+)Present, (-) Absent

Table 2: Phytochemical test carried out the *Pongamia glabra* plant extract in four solvent

Phytochemical test	Acetone	Methanol	Hexane	Chloroform
Alkaloids	+	+	+	+
Tannins	+	+	+	-
Saponins	+	+	+	+
Steroids	+	+	-	+
Triterpenoids	+	+	-	+
Glycosides	-	+	+	-
Flavonoids	-	+	+	-
Reducing sugar	+	-	+	+

(+) present, (-) Absent

Table 3: Phytochemical test carried out the *Sanctum* plant extract in four solvent

Phytochemical test	Acetone	Methanol	Hexane	Chloroform
Alkaloids	+	+	+	+
Tannins	+	+	+	+
Saponins	+	+	-	+
Steroids	-	+	+	-
Triterpenoids	-	+	+	-
Glycosides	+	+	+	+
Flavonoids	+	+	+	+
Reducing sugar	-	+	+	-

Table 4: Photochemical test carried out the *Pennetia tripetala* plant extract in four solvent

Phytochemical test	Acetone	Methanol	Hexane	Chloroform
Alkaloids	+	+	+	+
Tannins	+	+	+	+
Saponins	+	+	+	+
Steroids	+	+	-	-
Triterpenoids	-	+	-	+
Glycosides	+	+	+	+
Flavonoids	+	+	+	+
Reducing sugar	+	+	+	-

Table 5: Phytochemical test carried out the *Abutilon indicum* plant extract in four solvent

Phytochemical test	Acetone	Methanol	Hexane	Chloroform
Alkaloids	+	+	+	+
Tannins	+	+	+	+
Saponins	-	+	+	+
Steroids	+	+	+	-
Triterpenoids	+	+	+	+
Glycosides	+	+	-	+
Flavonoids	+	+	+	+
Reducing sugar	+	-	-	+

Phytochemical process was carried out among the five medicinal plant extracted of the different solvent are processed to determine the phytochemical constitute. The name of the different solvent Acetone, Methonal, Hexane, Chloroform, solvent are mediated to the plant extract was evaluated ^{4,6}.

Phytochemical process of the four solvent extract was carried out to detect the presence of secondary metabolite such as flavonoid, tannins, terpenoid, steroid, alkaloid, saponins, reducing sugar, using standard phytochemical method as reported by sofowora¹².

This test to indicate the presence of various bioactive secondary product which would be responsible for their five common plant attributes. Phytochemicals such as alkaloids, terpenoid, steroids, saponins were processed the standard methods, phytochemical analysis of plant was need to discover and extended to novel therapeutically agents with improved efficiency. In this process deals with the secondary based on phytochemical test of five plants *Clerodendrum inerme* , *Pongamia glabra* , *Sanctum*, *Pennisetia tripetala*, *Abutilon indicum*, were contain some specific phyto-constituents.

Phytochemicals in greenery food had great deals of attraction. Mainly on their role in preventing diseases caused and the result of oxidative stress, and release reactive oxygen species has single oxygen of various radicals as a damaging side effect of aerobic metabolism. The detailed information of phytochemicals in various solvent are used to the process of are shown in the above mention tables. This paper mainly revealed to the phytochemical as secondary metabolite and they can be used to the pharmaceutical industry for producing a efficient drug. This study indicating result of the above medicinal plants gives a basis of application in traditional medicine, and also contain some bioactivity of phytochemical constituents was more valuable. Qualitative analysis of photochemical was more interesting area and also important application of biomedical in pharmaceutical industries. This phytochemical analysis was very useful finding chemical compound in the plant material that lead to their quantitative estimation and locating the pharmacy field.^{8,9,10,15}

CONCLUSION

Screening of five medicinal plants was analysis to maximum classes of phyto-constituents is present. The medicinal plants have highest therapeutic efficiency by pharmaceutical field. The five medicinal plants extract to indicate the more positive result of methanolic plant extract, and other solvent of plant extract to indicate the result was positive result. The plants extract were to determine the presence of phyto-constituents. The medicinal plants have been used to treatment of so many disease and their medicinal roles of these plants have such a secondary product and identified the bioactive compounds. This paper reveals that above five medicinal plants gives a basis of its use in medicine and develop to further drugs in pharmaceutical area and also contains different biologically active constituents, and secondary product are valuable of further analysis.

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