

SCREENING OF TRADITIONALLY USED MEDICINAL PLANTS FOR POTENTIAL ANTIBACTERIAL & ANTIOXIDANT ACTIVITY

¹Saxena A, ²Sarkar S

School of Life Sciences, SHUATS, Prayagraj, UP, India.

***Corresponding Author: Aman Saxena**

Email ID: sxaman.7@gmail.com

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ABSTRACT

Secondary metabolites assimilated from various plants shows numerous medicinal properties. The aim of the study is to select the active metabolite from medicinal plant which possess excellence antibacterial property provide a potential source of many unique compounds with antimicrobial and other medicinal properties. The majority of these phyto-compounds are used as medicines for combating antibacterial metabolites against various strains. The secondary metabolite of respective part parts was extracted with polar and nonpolar solvents. Further these extracts were examined against gram positive and gram negative bacteria.

Key words: Secondary Metabolites, Medicinal, Phyto-compounds, Nonpolar, Polar.

INTRODUCTION

Plants were used globally for decades as medicines and treatments for various diseases [1]. There has been much work to discover new antibacterial compounds from diverse sources such as soil, microorganisms, animals and plants [2]. Folk medicines are one such resource and systematic screening of these can contribute to the discovery of novel and effective compounds [3]. Phytochemicals are the chemical compounds which are extracted from the plant sources. Generally, these compounds provide the plant based food materials, their different colours, taste and smell. Each phytochemical have the potential to protect our body in various ways, so that it is good to try and mix it up whenever we want it to be [12].

These compounds are also interconnected with each other and provide possible prevention towards various chronic diseases such as cancer, heart disease, diabetes high blood pressure etc. [8].

Most of the plant parts consisting the antimicrobial property, antioxidant property, antiulcer property etc. [7].

The subject of concern during recent years has been to make antibacterial drug therapy successful, affordable and safe [4]. There are numerous herbal extracts possessing antimicrobial activity [5-9]. Considering the above facts an attempt has been made to test various plants used in Indian folk medicine for the preliminary antibacterial action. For further analysis the most effective plant extract has been chosen. The research aimed to identify an active plant extract that could be useful in the production of new lead compounds to fight deadly diseases[10,11].

METHODOLOGY

Sample collection and extraction of bioactive compounds:

Initially the samples were collected and washed with distilled water, allowed to sun dry. The dried samples were crushed into fine powders and soaked in polar and nonpolar solvents in 1:10 ration for 48 hours. Further the samples allowed filtering and the filtrate were collected and then dried at 40⁰C, to remove the traces of solvents. The extracted metabolites were dissolved in DMSO and preserved for further use [13].

Screening of extracted bioactive compounds:

The screening was carried out by using agar well diffusion method, where the extracts were loaded on well, dig in nutrient agar plates with bacterial pathogens [14,15].

Phytochemical Screening:

Identification of phyto-compound such as alkaloids, tannins, saponins etc. was analyzed by screening the plant extracts [16-19].




Antioxidant activity:

Ferric reducing power of plant extracts were determined by using FRAP assay. This method is based on the reduction of colorless ferric complex to blue – colored ferrous complex [20].

RESULTS**Plant samples:**

The plant leaves were from different area of Hyderabad, India.

Table 1: Collected plant samples from different location of Hyderabad.

Sample	Location
 <i>Abutilon indicum</i>	Banjara Hills
 <i>Ammania baccifera</i>	Koti
 <i>Hedychium spicatum</i>	Begumpet

Screening of extracted metabolites:

The extracted metabolites were screened by using agar well diffusion method. Where the best results were obtained by acetone extract.

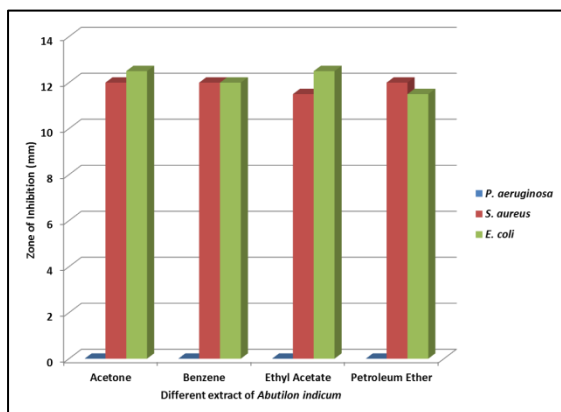


Figure 1 Antibiogram analysis of acetone, benzene, ethyl acetate and petroleum ether extracts of *Abutilon indicum*

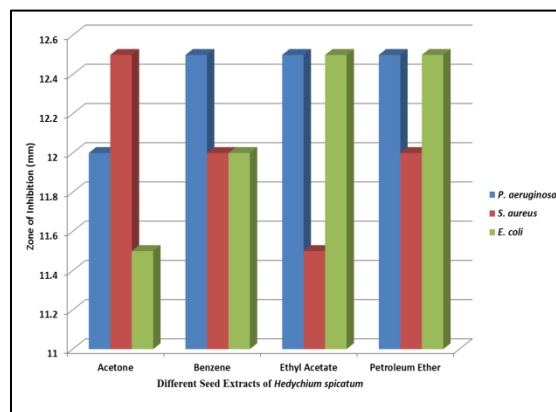


Figure 3 Antibiogram analysis of acetone, benzene, ethyl acetate and petroleum ether extracts of *Hedychium spicatum*

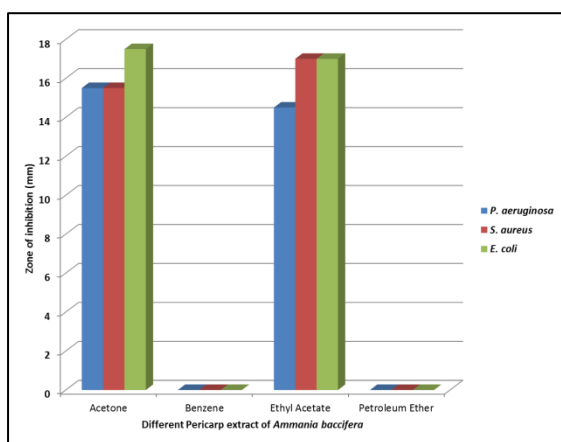


Figure 2 Antibiogram analysis of acetone, benzene, ethyl acetate and petroleum ether extracts of *Ammania baccifera*

Phytochemical Screening:

Table 2: phytochemical screening of acetone extracts of *Abutilon indicum*, *Ammania baccifera*, *Hedychium spicatum*.

Phytochemical	<i>Abutilon indicum</i>	<i>Ammania baccifera</i>	<i>Hedychium spicatum</i>
Tannins	+	-	-
Alkaloids	+	-	+
Saponin	+	+	+
Carbohydrate	+	+	-
Proteins	+	+	-
Flavonoids	+	+	+
Steroids	+	+	-

FRAP assay:

Antioxidant analysis of acetone extracts of *Abutilon indicum*, *Ammania baccifera*, *Hedychium spicatum* was carried out by using FRAP assay.

Table 3: Tabular representation of the FRAP assay for antioxidant analysis.

S no.	Sample	FRAP Value
1	<i>Abutilon indicum</i>	136.01
2	<i>Ammania baccifera</i>	112.02
3	<i>Hedychium spicatum</i>	69.02

FRAP values represent as equivalent mmol of Fe^{2+} / gram sample.

DISCUSSION AND CONCLUSION

The leaves from *Abutilon indicum*, *Ammania baccifera*, *Hedychium spicatum* were collected from local area of Hyderabad. Further the dried powder of these leaves samples were allowed to extract the active metabolites after soaking it in polar, nonpolar solvents such as acetone, benzene, ethyl acetate and petroleum ether. The extracted metabolites from these solvents were screened for the antibacterial analysis. Where acetone extract had been shown best results as compare with other extracts activity. Hence, the acetone extract was selected for further analysis.

The acetone extracts were also screened for phytochemical screening to check out which phyto-compound is present in it or not. The free radical scavenging of acetone extract of all three samples were performed. Where *Abutilon indicum* acetone extract has shown best reduction capacity by FRAP assay for antioxidant property. It was concluded that the free radical scavenging activity of these samples is directional proportional to the presence of phenolic content in it.

The screening results revealed that the use of mythology on some of the plants warranted. *Abutilon indicum* exhibited significant antibacterial activity in all plant species for which it can be shortlisted for further studies.

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