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PHYTOCHEMICAL PROFILE OF THREE SELECTED PLANTS OF *VITEX PUBESCENCE, VITEX PENDUCULARIS* AND *VITEX AGNUSCASTUS*

K ADITYA* AND A RAVI KUMAR
Department of Pharmacognosy Bapatla College of Pharmacy, Bapatla, Andhra Pradesh, India
***Corresponding author: E.Mail: adityakamma15@gmail.com**

ABSTRACT

A Phytochemical profile of three selected plant species *Vitex pubescence Vitex penducularis Vitex agnuscastus* were carried out. Crude dry powder analysis, ash value, solublility, extractive value, fluorescence analysis, qualitative analysis of Phytochemicals and mineral contents of the chosen plants were studied using various solvents.

KEY WORDS: Phytochemical profile Plant extracts, *Vitex pubescence, Vitex penducularis, Vitex agnuscastus.*

1. INTRODUCTION

A Knowledge of the chemical constituents of plants is essential not only for the discovery of therapeutic agents, but also such information discloses the source of economic materials such as tannins, oils, gums, precursors for the synthesis of complex chemical substances of different values. In addition, the knowledge of the chemical constituents of plants would further be valuable in discovering the actual value of folkloric remedies.

Several Phytochemical surveys have been carried out, including the random sampling approach, which involved some plant accessions collected from throughout the world. The major chemical substances of interest in these surveys have been the alkaloids and steroidal sapogenins, however, unsaturated sterols, triterprnoids, essential oils, etc. have also been reported. The present study was undertaken to determine the biologically active compounds that contribute to the flavor, color and other characteristic of the chosen plants.

2. MATERIALS AND METHODS

Three plant species roots of *Vitex pubescence, Vitex penducularis* and *Vitex agnuscastus* were authentified by Dr.A.Ravi Kumar Dept of Pharmacognosy Bapatla College of Pharmacy and collected from different parts of Guntur Krishna Prakasam Districts. The air dried plant material was made into fine powder in Willey Mill. The crude dried powdered materials are separately extracted with ethanol and water to a small bulk order reduced pressure at 50^0C was suspended in water. Further fractioned with solvents like hexane, benzene, chloroform, methanol and water were subjected to chemical evaluation value of benzene, chloroform, hexane, water and ethanol soluble extractive values are also determined.

Phytochemical screening

Alkaloid determination: Around 5g of sample was weighed into a 250 ml beaker and 200 ml of 10% acetic acid in ethanol was added. The mixture was covered and allowed to stand for 4 hours. Then filtered and extract was concentrated on a water bath to one-quarter of the original volume. Concentrated ammonium hydroxide was added drop by drop to the extract until the precipitates completely dissolved. The whole solution was allowed to settle and the collected precipitates were washed dilute ammonium hydroxide and the filtered. The alkaloid residue was dried and weighed.

Tannin determination: Around 500 mg of the sample was weighed into a 59 ml plastic bottle. To this, 50 ml of distilled water was added and shaken for 1 h in a mechanical shaker. This solution was filtered into a 50 ml volumetric flask and made ip o the mark. Then 5 ml of the filtered was pipette out into a test tube and mixed with 2 ml of 0.1 M. $Fecl_3$ in 0.1 N. HCL and 0.008 M potassium ferrocyanide. The absorbance was measured at 420 nm within 10 min.

Saponin determination: The samples were ground and 20 g of each were taken in a conical flask and 100 ml of 20%$ aqueous ethanol was added. The samples were heated over a hot water bath for 4 hours with continuous stirring at about 55^0 C. The mixture was filtered and the residue was re-extracted with another 200 ml of ethanol. The combined extracts were reduced to 40 ml over water bath at about 90^oC. The concentrate was transferred into a 250ml separator funnel and 20 ml of diethyl ether was added and vigorously shaken. The aqueous layer was recovered while the ether was discarded. The purification process was repeated. Then 60 ml of n-butanol was added. The combined n-butanol extracts were washed twice with 10 ml of 5% aqueous sodium chloride. The

remaining solution was heated in a water bath. After evaporation the samples were dried in an oven constant weight and the saponin content was calculated as percentage.

Flavonoid determination: About 10 g of the plant sample was extracted repeatedly with 100 ml of 80% aqueous methanol at room temperature. The whole solution was filtered through Whatman filter paper no. 42 (125 mm) and the filtrate was transferred to a crucible and evaporated to dryness over a water bath and weighed to a constant weight.

Determination of total phenolic compound: The fat free sample was boiled with 50 ml of ether for extraction of the phenolic competent for 15 min. From this 5 ml of the extract was pipette in to a 50 ml flask, then 10 ml of distilled water was added. Then 2 ml of ammonium hydroxide solution and 5 ml of concentrated amyl alcohol were also added. The samples were made up to mark and left to react for 30 min for color development. This was measured at 505 nm in a spectrophotometer.

3. RESULTS AND DISSCUSSION

The present study carried out on the three plant samples revealed the presence of medicinally active constituents. Table 1 presents the chemical composition of *Vitex pubescence, Vitex penducularis* and *Vitex agnuscastus*

Table.1.Crude dried powder analysis of the chosen plants

Plant	Total ash	Water Soluble ash	Alkalinity For water Soluble ash	Acid Insoluble ash	P^H 1% Aqueous solution	Loss on drying 110^{0} C
Vitex pubescence	NLT 6.01	NLT 2.79	0.36	NLT 0.71	6.7	NMT 6%w/w
Vitex penducularis	NLT 6.20	NLT 1.76	0.51	NLT 0.64	7.6	NMT 12%w/w
Vitex agnuscastus	NLT 7.06	NLT 2.76	0.1	NLT 0.57	6.8	NMT 6%w/w

NLT = Not less than; NMT = Not more than

Tough minerals such as sodium, magnesium, chloride and sulphate are present in all the studied plant species but no iron is present in the selected three plants.

Table.2.Mineral compositions of the selected plant species

Plant	Calcium	Sodium	Iron	Magnesium	Chloride	Sulphate
Vitex pubescence	+	+	NT	+	+	+
Vitex penducularis	+	+	NT	_	+	+
Vitex agnuscastus	+	+	NT	+	+	+

NT= Not traceable

Table.3.Percentage of crude polysaccharide, carbohydrate and tannin in the plants

Plant	Polysaccharide (%)	Carbohydrate (%)	Tannin
Vitex pubescence	9.1 mg	11.1 mg	64 mg
Vitex penduculalris	12.2 mg	14.3 mg	28.1 mg
Vitex agnuscastus	15.7 mg	13.7 mg	27 mg

Crude extract of the test samples in different extracts of selected plnats were analyzed results are given in tables.

Table.4.Extractive value of the chosen plants in various solvents

Plant	Benzene extractive values (%)	Chloroform extractive values (%)	Water soluble extractive values (%)	Ethanol soluble extractive values (%)
Vitex pubescence	NMT 2.1372	NMT 3.09324	NMT 10.22962	NMT 14.1963
Vitex penducularis	NMT 10.22823	NMT 12.71321	NMT 19.8741	NMT 4.7124
Vitex agnuscastus	NMT 3.07814	NMT 3.43087	NMT 7.53376	NMT 13.764

NMT=Not more than

Phytochemical screening of the three plants extracted in solvents; hexane, chloroform, ethanol and water were analyzed and results were given in tables.

Table.5.Qualitative analysis of the phytochemicals of the selected plants under various solvents

Plant	Extract	Saponin	Anthraquinone	Fkavonoid	Protein	Carbohydrate	Terpene
Vitex pubescence	Hexane	-	-	+	-	-	+
	Benzene	-	-	++	-	-	+
	Chloroform	-	++	++	-	-	-
	Ethanol	++	-	+	+	+	+
	Water	+	-	-	+	+	+
Vitex penducularis	Hexane	-	-	-	-	-	+
	Benzene	-	-	++	-	-	-
	chloroform	-	++	++	-	-	-
	Ethanol	++	+++	++	+	+	+
	Water	+	-	-	+	+	-
Vitex agnuscastus	chloroform	-	-	++	-	-	-
	Ethanol	+	+	++	+	+	-
	Water	+	-	-	+	+	-

The plants studied here can be seen as a potential source of useful drugs. Further studies are going on these plants in order to isolate, identify, characterized and elucidate the structure of the bioactive compounds

4. CONCLUSION

The screening of phytochemical constituents of plants *Vitex pubescence*, *Vitex penducularis* and *Vitex agnuscastus* indicated the presence of carbohydrates, flavonoids, alkaloids and steroids in common The plants contains more metabolites there is need for further investigations using fractionated extracts and purified chemical components

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