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Research Notes

Preliminary Phytochemical Screening of *Lantana camara* Linn

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Abstract: *Lantana camara* is a significant weed which is a low erect or subscandent, vigorous shrub with stout recurved prickles and a strong odour of black currents. The plant is spread widely in all over Madhya Pradesh state of India. Successive extracts from the whole plants of *Lantana camara* Linn (Verbanaceae) were used for their phytochemical screening. Hence, the present study describes the preliminary phytochemical screening and percentage yields of the various extracts like methanol, petroleum ether, chloroform and distilled water isolated from the whole plant of *Lantana camara* Linn.

Key-words – *Lantana camara*, phytochemical analysis, percentage yield.

INTRODUCTION

Lantana camara is a significant weed which is a low erect or subscandent, vigorous shrub with stout recurved prickles and a strong odour of black currents. *Lantana camara* has several uses, mainly as herbal medicines and in some areas as firewood and mulch.¹⁻³ There has been much work conducted, especially in India, on the chemical constituents of Lantana; extracts from the leaves exhibit antimicrobial, fungicidal, insecticidal and nematicidal activity.^{2,3,4} The plant is spread widely in all over Madhya Pradesh state of India. Several tri-terpenoids, flavonoids, alkaloids and glycosides isolated from this plant are known to exert diverse biological activities.⁵ Extract from the leaves of *L. camara* possessed larvicidal activity⁶ while extract from flowers of the plant showed repellent

activity against mosquitoes.^{7,8} In the present study, preliminary phytochemical screening of *Lantana camara* was done to know the presence of various phytoconstituents.

EXPERIMENTAL

Extraction and Isolation: Whole plant of *Lantana camara* was collected from surrounding areas of Vidisha District (M.P.) India and washed thoroughly with distilled water. It was identified and authenticated by Dr. P. N. Shrivastava (Taxonomist), S.S.L. Jain P.G. College, Vidisha. A voucher specimen was procured which was deposited in Department of Botany, St. Mary P.G. College, Vidisha (M.P.). Plant materials were dried under shade at room temperature in to the laboratory and were finely grinded using electrical grinder and stored in air tight container for further use. A total of 500 gm of the pulverized plant material was extracted in methanol, petroleum ether, chloroform and distilled water using Soxhlet apparatus for 4 days.

Separated extracts were then filtered through Whatman's No. 1 filter paper and the filtrate was then separately condensed to dryness using rotary evaporator. The solvent was then removed under reduced pressure the percentage yield obtained was petroleum ether (3.89%), chloroform (3.56%), methanol (5.42%) and distilled water (4.2%) w/w with respect to dried powder. The thick extracted mass was then dried at room temperature. Dried extract was collected in an air tight container and stored at 4°C for further analysis. Moreover, the individual extracts like petroleum ether, methanol, chloroform and distilled water were subjected to phytochemical study for the identification and presence of different phytoconstituents including steroids, glycosides, saponins, carbohydrates, alkaloids, flavonoids, tannins, proteins, tri-terpenoids and fixed oils.^{9,10}

Phytochemical screening methods

- **Detection of carbohydrates:** Extracts were dissolved individually in 5 ml distilled water and filtered. Filtrates were treated with 2 drops of alcoholic α -naphthol solution in a test tube and conc. Sulphuric acid was added Formation of the violet ring at the junction indicates the presence of carbohydrates.
- **Detection of glycosides:** Extracts were hydrolyzed with dil. HCl and then subjected to test for glycosides by treated with sodium nitroprusside in pyridine and sodium hydroxide. Formation of pink to blood red color indicates the presence of cardiac glycosides.
- **Detection of steroids:** Extracts were treated with chloroform and filtered. The filtrates were treated with few drops of acetic anhydride, boiled and cooled. Conc. Sulphuric acid was added. Formation of brown ring at the junction indicates the presence of steroids.
- **Test for saponins:** Extract (300 mg) was boiled with 5 ml water for two minutes; the mixture was cooled and mixed vigorously and left for three minutes. The formation of frothing indicates the presence of saponins.
- **Test for tannins:** To an aliquot of the extract (dissolved in water) 2 ml of sodium chloride (2%) was added, filtered and mixed with 5 ml 1% gelatin solution. Precipitation indicates the presence of tannins.
- **Test for Triterpenes:** Extract (300 mg) was mixed with 5 ml chloroform and warmed for 30 minutes. Few drops of concentrated Sulphuric acid were added and mixed well. The appearance of red color indicates the presence of triterpenes.

- **Test for alkaloids:** Extract (300 mg) was digested with 2 M HCl and the acidic filtrate was mixed with amyl alcohol at room temperature. Pink color of the alcoholic layer indicates the presence of alkaloids.
- **Test for flavonoids:** The presence of flavonoids was determined by using 1% aluminum chloride solution in methanol, concentrated HCl, magnesium and potassium hydroxide solution.

Table- 1: Preliminary Phytochemical screening of *Lantana camara* Linn.

S. No.	Test applied on the extract for the group	Petroleum Ether	Chloroform	Methanol	Distilled water
1	Carbohydrates	-	+	+	+
2	Glycosides	-	+	+	-
3	Steroids	+	+	+	+
4	Saponins	-	+	+	+
5	Tannins	+	+	+	+
6	Triterpene	+	+	-	+
7	Alkaloids	+	-	+	-
8	Flavonoids	-	+	+	+

+ (Present), - (Absent)

RESULTS AND DISCUSSION

In the present study, the good percentage yield of the extract of *Lantana camara* was found in methanol (5.42%), followed by distilled water (4.2%), petroleum ether (3.89%) and chloroform (3.56%), respectively. Almost similar observations have been reported by Patel et al.¹¹ who have isolated successive extracts from the leaves of *Lantana camara*.

The phytochemical analysis of the *Lantana camara* extract showed the presence of secondary metabolites viz. carbohydrates, glycosides, steroids, saponins, tannins, triterpenoids, alkaloids and flavonoids and the absence of fixed and volatile oils. These secondary metabolites are secreted by the plants for their defense which are being used by the peoples for various purposes. Presence of these secondary metabolites in the different extracts of *Lantana camara* have also been confirmed by Patel et al.¹¹, Mary Kensa,¹² Naz and Bano.¹³

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