

RESEARCH ARTICLE

BIO CHEMISTRY

PRELIMINARY PHYTOCHEMICAL STUDIES OF *LANTANA ACULEATA* ROOTS

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ABSTRACT

Lantana aculeata, a sprawling weed belongs to the Verbenaceae family available in plenty in many parts of the Indian Subcontinent and is known for its variety of biological uses due to the presence of various phytoconstituents. The roots of the plant in general contain a plethora of active compounds with varied chemical structures. Mature roots extracts have been chosen for the present phytochemical investigation as no study on this part was reported so far.

KEY WORDS

Lantana aculeata, Verbenaceae, Phytochemical analysis.

INTRODUCTION

Plants contain a wide variety of chemical compounds broadly classified as primary metabolites, secondary metabolites and semantides. Primary metabolites are parts of vital metabolic pathways and most of them are of universal occurrence, which include starch, cellulose, carbohydrates, etc. Secondary metabolites such as alkaloids, steroids, terpenoids, flavonoids, quinonoids, etc. that is responsible for a wide variety of biological activities of the plant. Their isolation, structural elucidation and studies on their biological activities form the basis for drug discovery programmes. Semantides are the information carrying molecules (DNA is a primary semantide, RNA is a secondary semantide and proteins are tertiary semantides). The plant kingdom represents an extraordinary resource of organic compounds. However, only few plants have been investigated chemically. The rapid disappearance of tropical forests has meant that it is essential to have access to methods which lead to the rapid isolation and identification of bioactive natural products and also minimize the amount of plant material used in a phytochemical study¹. Research on bioactive constituents of the extract or pure natural products for biomedical applications has been extremely useful to design new drugs. *Lantana aculeata*, an indigenous weed, finds a conspicuous place in the list of medicinal plants². Various parts of this taxon are attributed with medicinal properties³. The roots are used in the treatment of malaria, rheumatism and skin rashes⁴. In view of this, it is essential to have efficient systems available for the rapid

chemical screening of the plant extracts selected for investigation.

MATERIALS AND METHODS

Plant Material:

Mature roots of *Lantana aculeata* (Verbenaceae) were collected during the month of October – November from Puducherry (India). The plant materials was identified and authenticated by Dr. P. Jayaraman, Director, Plant Anatomy Research Centre, Medicinal Plant Research Unit, Chennai (India). A voucher specimen of both has been deposited for future reference (No. PARC/2006/8).

Preparation of Extract:

The roots were chopped into small pieces, shade dried and coarsely powdered. About 1-5 gram of each was extracted with n-hexane, ethyl acetate, chloroform, acetone and ethanol at room temperature; after 72 hours, the solvents were decanted. Further concentrations were done in vaccum under reduced pressure using rotary flash evaporator and finally dried in dessicator.

Phytochemical Screening:

The various phytoconstituents present in roots of *Lantana aculeata* were detected by their respective chemical tests using the appropriate extracts⁵⁻¹⁰.

RESULTS

The phytoconstituents in the roots of *Lantana aculeata* were recorded (Table 1).

Table 1
Phytochemical Screening of *Lantana aculeata* roots

Phytoconstituent	Test	n-hexane	Ethyl acetate	Chloroform	Acetone	Ethanol
Alkaloids	Dragendorff's test	-	-	-	-	-
	Hager's test	-	-	-	-	-
	Wagner's test	-	-	-	-	-
	Mayer's test	-	-	-	-	-
Sterols	Salkowski test	-	-	-	-	-
Triterpenoids	Liebermann-Buchardt test	+	+	+	+	+
Phenolics	Ferric chloride test	-	-	-	+	+
	Folin ciocalteu test	-	-	-	+	+
Flavonoids	Shinoda test	-	-	-	+	+
	Lead acetate test	-	-	-	+	+
Glycosides	Baljet test	-	-	-	-	+
	Keller Killiani test	-	-	-	-	+
Anthraquinone	Borntrager test	-	-	-	+	+
Tannins	Lead acetate test	-	-	-	+	+

+ Present; - Absent

DISCUSSION

Lantana aculeata is a pan-tropical weed bounty in vast areas of the country¹¹. It was thought worth while to investigate the roots scientifically. As no detailed work has been done on root, it has been envisaged to consider it for the study. The chemical profile of the plant material served as diagnostic tool in correct identification. The colour tests on the root extract showed the presence of terpenoids, phenols, flavonoids and glycosides as some of its secondary metabolites and indicated that the roots of *Lantana aculeata*

possessed plethora of active compounds, an important target for new pharmacological tests. Hence it can be concluded that chemical screening provides important information about the plant constituents and will be a sufficient condition for the discovery of potent new drugs.

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