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Research Article

PRIMARY AND SECONDARY PHYTOCHEMICAL ANALYSIS OF SOME MEDICINALLY POTENT PLANTS

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ABSTRACT
This present study reports 24 methanolic extracts prepared from the 6 Indian plants belonging to six families collected from the forest located in Jaipur and near by area. Qualitative preliminary phytochemical screening was performed on aforesaid extracts for the presence of alkaloids, flavonoids, steroids and terpenoids. Each analysis was carried out in triplicate. Which shows positive results for alkaloids (30.43%), flavonoids (47.82%), steroids (65.21%) and terpenoids (43.47%), respectively.
KEY WORDS: Indian medicinal plants; Phytochemical screening; Alkaloids; Flavonoids; Steroids; Terpenoids

INTRODUCTION

There is ample literature on preliminary phytochemical surveys and the knowledge of the chemical constituents of plants is desirable to understand herbal drugs and their preparations which is maintain in ancient literature Most importantly, these studies will be helpful to isolate and characterize the chemical constituents present in those plant extracts. In addition, the knowledge of the chemical constituents of plants would further be valuable in discovering the actual value of folkloric remedies. Therefore, 6 Indian medicinal plants belonging to six families were collected in view of this survey from the local forest, Jaipur, India and qualitative investigation was carried out to evaluate the presence of phytochemicals.

MATERIALS AND METHODS

Experimental Plant material collection

Six different plant (*Argemone mexicana , Asparagus racemosus, Cyperus rotundus, Tagetes erecta, Tinospora cordifolia , Melia azedarac*) was collected from different area of jaipur region and Kapoor Chand Kulish Smriti Van ,Jaipur.The collected plants were shade dried and finely powdered. The powdered material was extracted with constant agitation for 48 h. The extracts were filtered using Whatman filter paper (no. 1) and then concentrated *in vacuo* at 40 °C using a Rotary evaporator and stored at 4°C.[1,2]

Extraction

A small scale extraction was carried out in view of preliminary bio-analysis. The dried pulverized plant material (1-5 g) was extracted with methanol at room temperature the methanol was decanted after 24 hours and the extraction repeated three times. The pooled extracts were filtered and then concentrated under vacuum using a rotary evaporator at 40°C.

Sample Preparation

Crude extracts were prepared by weighing 5 mg approximately and dissolved with 1 ml of double distilled water. Later these solutions were diluted as per the requirement.

Test for primary metabolites

Carbohydrates

Carbohydrates was estimated by protocol prescribed by method [3].

Starch

Starch was estimated by protocol prescribed[4]

Proteins

Protein was estimated by protocol prescribed[5]

Lipids

Lipid was estimated by protocol prescribed[6].

Phenol

Total phenol was estimated by protocol prescribed[7]

Preliminary Phytochemical Analysis

Qualitative phytochemical tests for the identification of alkaloids, flavonoids, steroids and terpenoids were carried out for all the extracts by the method described[2,8]. These tests were carried out in triplicate using various concentrations of sample.

Test for Alkaloids

A small portion of crude extract was dissolved in 5ml of 1% hydrochloric acid, filtered and tested with Dragendorff's reagent and Mayer's reagent separately. Any precipitate or turbidity with the reagents suggests the presence of alkaloids.

Test for Flavonoids

A few drops of conc. hydrochloric acid and 1-2 magnesium turnings were added to 1 ml of methanolic extract. The presence of flavonoids was indicated by the development of pink or magenta-red colour.

Test for Steroids and Terpenoids

A small portion of extract was dissolved in 1ml of chloroform and filtered. To the filtrate on ice, 1 ml of acetic acid was added and then a few drops of conc. sulphuric acid were run down the side of the test tube. The appearance of a pink or pinkish-brown ring / colour indicates the presence of terpenoids. The appearance of blue, bluish-green or a rapid change from pink to blue colour indicates the presence of steroids and a combination of pink and these colour indicates the presence of both steroids & terpenoids.

RESULTS AND DISCUSSION

The present study involved the collection, identification, extraction and phytochemical evaluation of extracts derived from commonly occurring native plants growing in Jaipur plant species belonging to 6 different families were collected. Most of these plants were reported to treat a variety of diseases in traditional system of medicine[9-12]. Plant species and their voucher specimen were deposited in university herbarium. Twenty four methanolic extracts were prepared from various parts of plants such as flower, fruit, leaf, root, stem and in some cases the whole plant materials were used belonging to 6 plants. The preliminary phytochemical screening for the presence of alkaloids, flavonoids, steroids and terpenoids and primary metabolites was carried out on aforesaid extracts and the results are reported in various sections. Which shows positive results for alkaloids (30.43%), flavonoids (47.82%), steroids (65.21%) and terpenoids (43.47%), respectively. (Table 1.) The plants are also contain high quantity of primary metabolites which shows in (Table 2.)

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Table 1. Primary screening of Phytochemicals

Sr. No	Plant Name	Plant Part	Alkaloids	Flavonoids	Steroids	Terpinoides
1	*Argemone mexicana*	Leaf	+	+	+	+
		Stem	_	_	+	_
		Root	_	+	_	+
		Flower	_	+	+	_
2	*Asparagus racemosus*	Leaf	_	+	_	_
		Root	_	+	_	_
		Flower	+	_	+	+
3	*Cyperus rotundus,*	Leaf	_	+	+	+
		Stem	_	_	+	_
		Root	_	_	+	_
		Flower	_	+	_	+
4	*Tagetes erecta*	Leaf	+	+	+	+
		Stem	_	_	_	_
		Root	_	_	+	_
		Flower	_	+	+	_
5	*Tinospora cordifolia*	Leaf	+	_	_	+
		Stem	_	_	+	_
		Root	_	_	+	_
		Flower	+	+	+	+
6	*Melia azedarac*	Leaf	+	_	+	+
		Stem	_	_	_	_
		Root	_	_	_	_
		Flower	+	+	+	+

Table.2. Estimation of Primary metabolites

S. No.	Plants	Carbohydrates mg/gdw	Starch mg/gdw	Protein mg/gdw	Lipid mg/gdw	Phenol mg/gdw
1	*Argemone mexicana*	6.65	7.12	44.40	68.00	29.51
2	*Asparagus racemosus*	4.21	3.94	32.17	21.13	68.32
3	*Cyperus rotundus,*	3.80	6.43	22.62	29.36	72.46
4	*Tagetes erecta*	5.13	2.3	39.77	72.20	21.39
5	*Tinospora cordifolia*	7.20	5.30	42.9	58.00	19.00
6	*Melia azedarac*	6.21	4.87	41.00	48.90	17.89

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