Annals of Plant Sciences
ISSN: 2287-688X
Short Communication

Phytochemical Analysis of Root Bark of *Argemone Mexicana* L.

Pingale Shirish S
Department of Chemistry, Gramonnati Mandal's Arts, Commerce And Science College, Narayangaon, Junnar, Pune, Maharashtra, India

Received for publication: January 15, 2013; **Accepted**: February 22, 2013.

Abstract: *Argemone Mexicana* is widely occurring herb found in tropical and subtropical region of the world. This plant has many medical applications. The root bark is diuretic and used for treatment of skin diseases. It is also used as the best liver tonic against liver disorders. Plant constituents of medicinal importance form an extensively diverse group of chemical compounds showing greater variation in solubility and stability. These are fixed oils, fats and waxes, phenols, Tannins, Proteins, alkaloids, Carbohydrates, glycosides, Volatile oils, Resins and Resin Combinations. In present study the phytochemical analysis of root bark powder is carried out by extraction method. The classical chemical procedure for obtaining constituents from dried plant tissues is to continuously extract powdered material in soxhlet apparatus. The observations of phytochemical extracts like moderately polar extract of terpenoids and phenolics, basic extract of alkaloids, polar extract of quaternary alkaloids and n-oxides, neutral extract of fats and waxes and fibers is used for calculation of percent extraction. After complete phytochemical profile of given plant material fractionation of crude extract is desirable in order to separate the main classes of constituents from each other prior to chromatographic analysis.

Keywords: *Argemone Mexicana*, extraction phytochemical analysis, and Neutral residue.

Introduction

Argemone Mexicana L. is widely distributed weed grows in tropical and subtropical countries including INDIA. Sandy oil and sunny situations are ideal for the growth of this plant. The root bark of this plant has medicinal importance and form diverse group of chemical compounds with reference to variation in solubility and stability. *Argemone Mexicana* L. (weed) is available in ample amount all over the world.

The phytochemicals can be broadly classified as fixed oils, fats and waxes (lipids), phenols, Tannins, proteins, alkaloids carbohydrates glycosides volatiles oils, resin and combinations. The precise mode of extraction depends on the tenure and type of the substance isolated. The classical chemical procedure for obtaining constituents from dried plants tissues is to continuously extract powdered material by Soxhlet apparatus with a range of solvents.

Materials and Methods

Experimental:

The roots of *Argemone Mexicana* L., were collected, cleaned, washed and dried in shades. After complete drying the dry roots are kept in oven at 30^0C for one week and then powdered (sieved by 80 mesh size). The powder is used for further analysis. Following steps were used for phytochemical analysis:

a) Accurately weighed 5gm of the plant powder was packed in Whatman filter paper and kept in soxhlet apparatus for continuous extraction for 12 hrs. The mixture of methanol and water 125 ml in volume ratio 4:1 was used as extractant. The extract was cooled and filtered through Whatman filter paper no.41 into a dry, pre-weighed beaker.

b) The residue was extracted with 125CC of (5 x 25 CC) of ethyl acetate and filtered into a dry pre-weighed beaker. The residue obtained after filtration comprised plant fibers. Weight of the residue was noted down and percent crude fiber was calculated.

c) The filtrate obtained according to Atal and Kapur (2) was evaporated to dryness on a water bath maintained at 45^0C+-5^0C after evaporation of EtoAc the beaker was allowed to cool at room temp in dessicator. After cooling the weight of beaker containing the residue was noted down. The residue obtained was reconstituted in EtOAC to obtain a final concentration of 10mg/cc. This extract was filtered through W filter paper no. 41. The filtrate was neutral extract. It consists of fats and waxes.

d) The filtrate obtained from the method (1) was evaporated to approximately 1/10^{th}

***Corresponding Author:**
Dr. Pingale Shirish S,
Department of Chemistry,
Gramonnati Mandal's Arts,
Commerce and Science College, Narayangaon,
Junnar, Pune, Maharashtra, India

its volume by heating in a water bath maintained at a temp less than 70^0C. It was acidified with 2M H_2SO_4. The acidified filterate was extracted using 75 CC (3 x 25 CC) chloroform in a separating funnel. The chloroform layer was transferred to a dry pre-weighed beaker. The chloroform layer was evaporated to dryness on a water bath maintained at 45 C +- 5 ^{0}C

e) After evaporation of chloroform the beaker was allowed to cool at room temp in dessicator. After cooling the weight of this beaker containing the residue was noted down. The residue obtained was reconstituted in chloroform to obtain a final conc. Of 10mg/cc. This extract was filtered through filter paper no. 41. The filtrate obtained was the moderately polar extract, which consists of terpenoids.

f) The aqueous Layer obtained from (4) was basified to pH=10 with 2M NaOH. It was further extracted with 60 CC (2 x 30 CC) chloroform: method in volume ratio 3:1 followed by extraction with 40 CC (2 x 20 CC) chloroform in a separating funnel. The aqueous Basic layer was transferred to a dry pre-weighed beaker. The aqueous Basic layer was evaporated to dryness on a water bath maintained at 70^0C. After evaporation of the solvent the beaker was allowed to cool at room temp in a dessicator. After cooling, the weight of the beaker containing the residue was noted down. The residue obtained was reconstituted in methanol to obtain a conc. Of 10 mg/ cc. The extract was filtered through Whatman filter paper no. 41. The methanol extract obtained was the polar extract. The polar extract consists of quaternary alkaloids and N. oxides.

g) The organic layer (Chloroform and methanol) was transferred to a dry and pre-weighed beaker on a water bath maintained at 45ºC±5^0C. After evaporation of the solvent the beaker was allowed to cool at room temperature in a dessicator. After cooling the weight of the beaker containing residue was noted down. The residue obtained was reconstituted in chloroform to obtain final concentration of 10mg/cc. The extract was filtered through Whatman filter paper no.41. The chloroform extract was the basic extract, consisting of alkaloids.

h) Two grams of dried leaf powder was extracted with 100cc MeOH (4 x 25 CC) in a dry stoppered conical flask. The extract was filtered into a dry pre-weighed beaker. The filtrate obtained was evaporated to dryness on water bath maintained at 70^0C. After evaporation, the beaker was allowed to cool at a room temperature in a dessicator. After cooling, the weight of the beaker containing the residue was noted down.

Results and discussion

Sr.No	Observations	% Extract
1	Moderately polar extract (Terpenoids & Phenolics)	0.994%
2	Basic extract (Most Alkaloids)	0.664%
3	Polar extract (Q. Alkaloids & N-oxides)	28.126%
4	Neutral Extract (fats and waxes)	1.63%
5	Fibers	68.874%

Each observation is mean of five readings.

Argemone Mexicana L. root bark contains moderately polar extract (Terpenoids & Phenolics) 0.994%, Basic extract (Most Alkaloids) 0.664%, Polar extract (Q. Alkaloids & N-oxides) 28.126%, Neutral Extract (fats and waxes) 1.63%, Fibers 68.874%.

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Source of support: Nil
Conflict of interest: None Declared