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Phytochemicals Identification of Parthenium hysterophorus L., Argemone mexicana L.,Portulaca oleracea L. from Agra district of Uttar Pradesh

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ABSTRACT: Weeds are important biotic constraint to food production. Weeds compete with crops for the same resources, basically water, nutrients, light and carbondioxide. Furthermore, they are alternate hosts for crop pests and pathogens. Some weeds are highly nutritious, as human food, or animal feed. The phytochemicals present in weeds act as potential source of useful drugs to improve the health status of humans. Phytochemicals identification is the first step towards the discovery of useful drugs. Weeds are the richest resource of drugs and useful for the various biological activity also. Parthenium hysterophorus confer many health benefits, viz remedy for skin inflammation, rheumatic pain, diarrhoea, urinary tact infection,dysentery malaria and neuralgia. The present investigation includes the phytochemical screening of some common weed species from thecrop fields of Agra district. Phytochemical tests were carried out specially for screening secondary metabolites from the selected weed plants. The phytochemicals like Tannin, Coumarin, Saponin, Proteins, Amino acids, Flavonoids, Cordial Glycosides are present and Carbohydrates, Alkaloids are absent in these weeds. So they indicate that these leaves of weed contain a number of medicinally important compounds.

KEYWORDS: Phytochemicals, Parthenium hysterophorus L., Argemone mexicana L., and Portulaca oleracea L. a

I.INTRODUCTION

Weeds are often defined as plants growing where they are unwanted. The definition reflects our attitude, but doesn't help us understand the roles these plants play in managed ecosystem.Phytochemical analysis is the primary way to the discovery of new useful drugs. Plants are the greatest reservoirs of drugs of traditional system of medicine, phytochemical intermediates and chemical entities for the synthetic drugs[1].Phytochemicals are, biologically active chemical compounds naturally occurring in plants. They are non-nutritive plant chemicals that have protective or disease preventive properties. They are a large group of plant-derived compounds hypothesized to be responsible for much of the disease protection conferred from diets high in fruits, vegetables, beans, cereals and plant-based beverages such as tea and wine[2]

They are non-essential nutrients, meaning that they are not required by the human body for sustaining life. It is well-known that plant produce these chemicals to protect themselves but recent research demonstrate that they can also protect humans against diseases. More than 4,000 of these compounds have been discovered, and it is expected that scientists will discover many more. Some of the well-known phytochemicals are lycopene in tomatoes, isoflavones in soya and flavanoids in fruits[3]

The presence of certain types of phytochemicals in some plants can act as a natural defense system providing protection against such things as attack from insects and grazing animals. In contrast, other plants produce phytochemicals that provide colour, aroma and flavour, thus inviting attention from potential consumers.

Vegetables could provide as many as 100 different phytochemicals. They are classified into terpenoids such as the carotenoids and other phenolic compounds flavonoids alkaloids. There are works differently like antioxidant, hormonal action, stimulation of enzymes, interference with DNA replication, anti-bacterial effect and physical action. In recent years, Secondary plant metabolites (Phytochemicals), previously with unknown pharmacological activities, has been extensively investigated as a source of medicinal agents [4]. Nature has been a source of medicinal agents since emphasized.

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II.MATERIALS AND METHODS

Plant collection and identification

We collected *A Parthenium hysterophorus* L., *Argemone mexicana* L. *Portulaca oleracea* L. and *Euphorbia geniculata* Ortega. from different location of Agra (U.P.) districts. These samples were free from disease. This plant materials were identified by *Dr. A.K. Singh,Department of Botany RBS College Agra.*

Extraction of plant material Preparation of aqueous extracts

We weighed 15gm of sample using an electronic balance and 15 gm of plant material were crushed in 500 ml of distilled water and filter through muscline cloth. These samples are used for photochemical analysis.

Preliminary Phytochemical Analysis

The individual extract was subjected to the qualitative phytochemical screening for the presence of some chemical constituents. Phytochemical test were carried out adopting standard procedure[5]

Test for Alkaloids

A quantity (3 ml) of concentrated extract was taken into test cooled and filter, the filtrate was used for following test.

Dragen Droff's Test: 2 drops of Dragen droff's reagent were added to 1ml of the extract. The development of a creamy ppt was indicates of the presence of alkaloids.

Test for Saponin

5 ml extract was mixed with20 ml of distilled water then agitated in the graduated cylinder. For 15 min formation of foam indicates Saponin.

Test for Steroids

1 ml extract was dissolved in 10 ml of chloroform and equal volume of concentrated H2SO4 acid was added from the side of test tube. The upper layer turns red and H2SO4 layer showed yellow with green fluorescence. This indicates the presence of steroid.

Test for Tannin

4ml of extract was treated with 4 ml FeCl3 formation of green colour indicates that presence of condensed tannin.

Test for Anthocyanin

2 ml of aqueous extract is added to 2 ml of 2N HCl and NH3, the appearance of pink red turns blue violet indicates presence of the Anthocyanin.

Test for Coumarin

3 ml of 10% of NaOH was the added to 2 ml of aqueous extract formation of yellow colour indicates the presence of Coumarins.

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Test for Emodins

3 ml of NH4OH and 3 ml of Benzene was added to extract appearance of the of the red colour which indicates the presence of Emodins.

Test for Protiens

Xanthoproteic Test: Extract was treated with few drops of concentrated HNO3 formation of yellow colour indicates the presence of Protiens.

Test for Amino Acid

Ninhydrin Test: To the 2 ml of extract 2 ml on the Ninhydrin reangent was added and boil the for few minutes, formation of blue colour indicates the presence of the Amino Acid.

Test for Flavonoids

Alkaline Reagent Test: Extract was treated with 10 % of NaOH solution, formation of intense yellow colour indicates the presence of the Flavonoids.

Test for Diterpenes

Copper Acetate Test: Extract were dissolved in water and treated with copper acetate solution, formation of the emerald green colour indicates presence of Diterpenes.

Test for Phytosterol

Salkowski's Test: Extract iwas treated with chloroform and filtered. The filtered was treated with few drops of concentrated H2SO4 and shakes, allow the standing, appearance of golden red indicates the positive test.

Test for Phenol

Ferric chloride Test: Test extract were treated with 4 drops of Alcoholic FeCl3 solution. Formation of bluish black colour indicates the presence of Phenols.

Test for Phlobatannins

Deposition of red ppt when aqueous extract of each plant sample is boiled with 10 % aqueous HCl was taken evidence of presence of the Phlobatannins.

Test for Leucoanthocyanine

5 ml of isoamyl alcohol added to the 5 ml of aqueous extract, upper layer appear red in colour indicates presence of the Leucoanthocyanine.

Test for Anthraquinone

5 ml of extract was hydrolyzed with dilute H2SO4, then add the 1 ml of benzene and 1 ml of NH4, formation of Rose Pink coloration suggested that presence of Anthraquinone.

Test for Cardial Glycosides

Killer-Killani Test: Plant extract treaed with glacial acetic acid containing a drop of FeCl3. A brown coloured ring indicates the presence of the positive test.

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Test for Carbohydrates

Iodine Test: Take 2 ml of extract were treated with 5 drops of Iodine solution, gives blue colour, indicates the positive test.

Benedict's Test: Filtrate were treated with the Benedict's reagent and heated gently, orange red ppt indicates the presence of reducing sugar.

III. RESULTS & DISCUSSION

Table 1: Phytochemical analysis of weed *Parthenium hysterophorus* L. (A) & (B) and Argemone L.(A)

Sr. No.	Phytochemicals	*Parthenium hysterophorus L.* (A)	*Parthenium hysterophorus* L. (B)	*Argemone Mexicana L.(A)*
1.	Alkaloids	-	-	-
2.	Saponin	+	+	+
3.	Tannin	+	+	+
4.	Anthrocyanin	-	+	+
5.	Coumarin	+	+	+
6.	Proteins	+	+	+
7.	Amino Acids	+	+	+
8.	Flavonoids	+	+	+
9.	Phenol	+	-	-
10.	Phlabotannins	-	-	-
11.	Cardial Glycosides	+	+	+
12.	Carbohydrates	-	-	-

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Table 2: Phytochemical analysis of weed *Argemone mexicana* L.(B) and *Portulaca oleracea* L.(A)&(B)

Sr. No.	Phytochemicals	*Argemone mexicana* L. (B)	*Portulaca oleracea* L.(A)	*Portulaca oleracea* L. (B)
1.	Alkaloids	-	-	-
2.	Saponin	+	+	+
3.	Tannin	+	+	+
4.	Anthrocyanin	-	*	-
5.	Coumarin	+	+	+
6.	Proteins	+	+	+
7.	Amino Acids	+	+	+
8.	Flavonoids	+	+	+
9.	Phenol	+	-	-
10.	Phlabotannins	-	-	-
11.	Cardial Glycosides	+	+	+
12.	Carbohydrates	-	-	-

Note: [(+)= Positive, (-)=Negative, (*) Doutful]

The photochemical constituents of *Parhenium histerophorus* L. is analysis two part (A) and (B) presented in table:1 shows (A) part presence of saponin, tannin, coumarin, protein, amino acids, flavonoid, phenol, cardial glycosides and alkaloids, anthocyanin, phlobatannins, carbohydrates are absent and (B) part show Anthrocynin presnt as well phenol absent[6}. In Argemone Mexicana L. the (A) part show Saponin, tannin, anthocyanin, coumarin, protein, amino acid, flavonoid, cardial glycosides are present whereas Alkoloide,phenol, phlabotannins are absent and in (B) part Anthrocyanin absent and phenol, flavonoid are present. In *Portulaca oleracea* L. (A) pa r t sh ow saponin, tannin, coumarin, protein, amino acid, flavonoid, cardial glycosides are present and alkaloids, phenol, phlobatannins, carbohydrates are absent whereas Anthrocyanin is uncertain and in the part Alkaloid, Anthrocynin, phenol,phlabotannins and carbohydrates are absent although Saponin,Tanin, Coumarin, Protein, Amino acids, Flavinoid, and cardial Glycosides are Present[7].

IV.CONCLUSIONS

The phytochemicals observed in this study shows these plants have a potency for use in producing pharmaceutical bioactive compounds for therapeutic drugs. Further studies should be carried out on this plants in order to isolate, identify the bioactive compounds and determine their mechanism in for treating diseases and have a potential for

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providing a drug for human being. There is the need to encourage the research on the utilization potential of the weed and to evaluate its efficacy on field trials. The discovery of the uses of weed also cold pave the way for indirect eradiction of the weed.

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