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Effect of Phytochemical Constituents of *Argemone Mexicana* Leaf Extract

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Abstract: ***Argemone Mexicana is a herb in Papavceraceae family, traditionally used in treatment of several diseases. The present study was carried out to investigate the phytochemical screening of the leaf extract of Argemone Mexicana. Phytochemical screening of Argemone Mexicana leaf extract was performed using the qualitative photochemical analysis procedures. The preliminary phytochemical screening of Argemone Mexicana leaf (AML) extract was done using various tests with different reagents. The leaf extract has positively answered for carbohydrates, phenols, flavonoids, terpenoids, tannins, alkaloids, coumarins, quinines, fats and fixed oils***
Keywords: Argemone Mexicana, Medicinal plants, Phytochemical screening.

I. INTRODUCTION

Phyto chemistry is the scientific study of the chemicals found in plants. Those studying phytochemistry strive to describe the structures of the large number of secondary metabolic compounds found in plants, the functions of these compounds in human and plant biology and the biosynthesis of these compounds. Plants synthesize phytochemicals for many reasons including to protect themselves against insect attacks and plant diseases. Phytochemicals in food plants are often active in human biology and in many cases have health benefits. The compounds found in plants are of many kinds but most are in four major biochemical classes the alkaloids, glycosides, polyphenols, and terpenes.

Argemone Mexicana is a species of plant in the Papavceraceae family. It is an important medicinal herb found as a weed throughout India. Though almost all of its parts are used in traditional systems of medicines. Leaves, seeds and roots are the most important parts which are used for their medicinal properties.[2]

II. MATERIALS AND METHOD

A. Collection of the Plant

The leaves of Argemone Mexicana were collected from Immidipalayam village, Kinathukadavu (Tk), Coimbatore (Dt), Tamilnadu, India, during the month of August. Freshly collected leaves of Argemone Mexicana were thoroughly washed with tap water followed by distilled water and then shade dried at room temperature. The dried plant sample were crushed and powdered to prepare the extract.



Figure 1: Dried Leaves of Argemone Mexicana

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Figure 2: Powdered AML



Figure 3: AML extract

B. Preparation of Plant Extract

Aqueous extract of Argemone Mexicana leaves was prepared according to the method described by Dash et al. 100 gm of Argemone Mexicana leaves were collected from the field and washed thoroughly under running tap water. It was dried on tissue paper for seven days at room temperature and then dried in an oven below 50˚ C. Further it was crushed in a blender properly and 100 mL of distilled water was added to make solution . The prepared solution was kept for 48 h with constant stirring. After giving time for extraction, solution was used for the study.

C. Qualitative Phytochemical Analysis

Phytochemical screening of Argemone Mexicana leaf extract was performed using the qualitative photochemical analysis procedures.

1) Test For Carbohydrates

Molisch's Tests

2 mL of aqueous extract was taken in a test tube and 2 mL of the Molisch's reagent was added and shaked carefully. Then 1mL of concentrated sulphuric acid was poured from the side of the test tube and allowed to stand for 1 minute. The appearance of red brown ring indicates the presence of carbohydrates.

2) Test For Phenols

Ferric Chloride Test

The extract was treated with 2 mL of water and 10 % aqueous ferric chloride solution. Blue or green colour indicated the presence of the phenol.

3) Test For Flavonoids

Zinc Test

2 mL extract was treated with Zn dust and conc. HCl. Development of red colour indicated presence of the flavonoids.

4) Test For Glycosides

Keller Kilani Acetic Acid Test

A mixture of acetic acid glacial (2 mL) with 2 drops of 2 % Ferric chloride solution was added to the plant extract and conc. H_2SO_4. A brown ring was produced between the layers which indicated the entity of glycosides.

5) Test For Steroids

Liebermann Burchard test

Concentrated extracts were added with 2 mL of acetic anhydride and 1 mL of concentrated sulphuric acid. Formation of bluish to green colour indicated the presence of steroids.

6) Test For Terpenoids

Concentrated Sulphuric Acid Test

In 1 mL of plant extract 2 - 3 mL of acetic anhydride was mixed and then 1 - 2 drops of conc. H_2SO_4 was added. The pink or red coloration of the solution indicated the presence of terpenoids.

7) Test For Alkaloids

Mayer's Test

The extract was treated with few drops of Mayer's reagent. The white or pale precipitate indicated the presence of alkaloids.

8) Test For Tannins

Ferric Chloride Test

The ethanolic extract was treated with 2 mL of ferric chloride solution. A blue black precipitate was observed, indicating the presence of tannins.

9) Test For Fats And Mixed Oils

Test with Sodium Hydroxide

The extract was mixed in 1 mL of 1 % copper sulphate solution followed by 10% sodium hydroxide solution. Appearance of blue colour showed the presence of glycerine.

10) Test For Quinones

Test with Sodium Hydroxide

To 1 mL of the extract, 1mL of dilute NaOH was added. Formation of red colour showed the presence of quinones.

11) Test For Coumarins

Test with Sodium Hydroxide

To 1 mL of the extract, 1 - 2 mL of hot distilled water and 0.5 mL of 10 % NH_4OH was added. Appearance of intense fluorescence colour indicated the presence of coumarins.[3]

III. RESULTS AND DISCUSSION

A. Qualitative Phytochemical Analysis

The preliminary phytochemical screening of Argemone Mexicana leaf (AML) extract was done using various tests with different reagents. The leaf extract has positively answered for carbohydrates, phenols, flavonoids, terpenoids, tannins, alkaloids, coumarins, quinines, fats and fixed oils as shown in (Figure 4 and Table 1).



Figure 4 Phytochemical Analysis of AML Extract

Table 1: Phytochemical Analysis of *AML* extract

S.no	Phytocompounds	Inference
1.	Carbohydrates	+
2.	Phenols	+
3.	Flavonoids	+
4.	Glycosides	-
5.	Steroids	+
6.	Terpenoids	+
7.	Alkaloids	+
8.	Tannins	+
9.	Fats and Fixed oils	+
10.	Coumarins	-
11.	Quinones	+

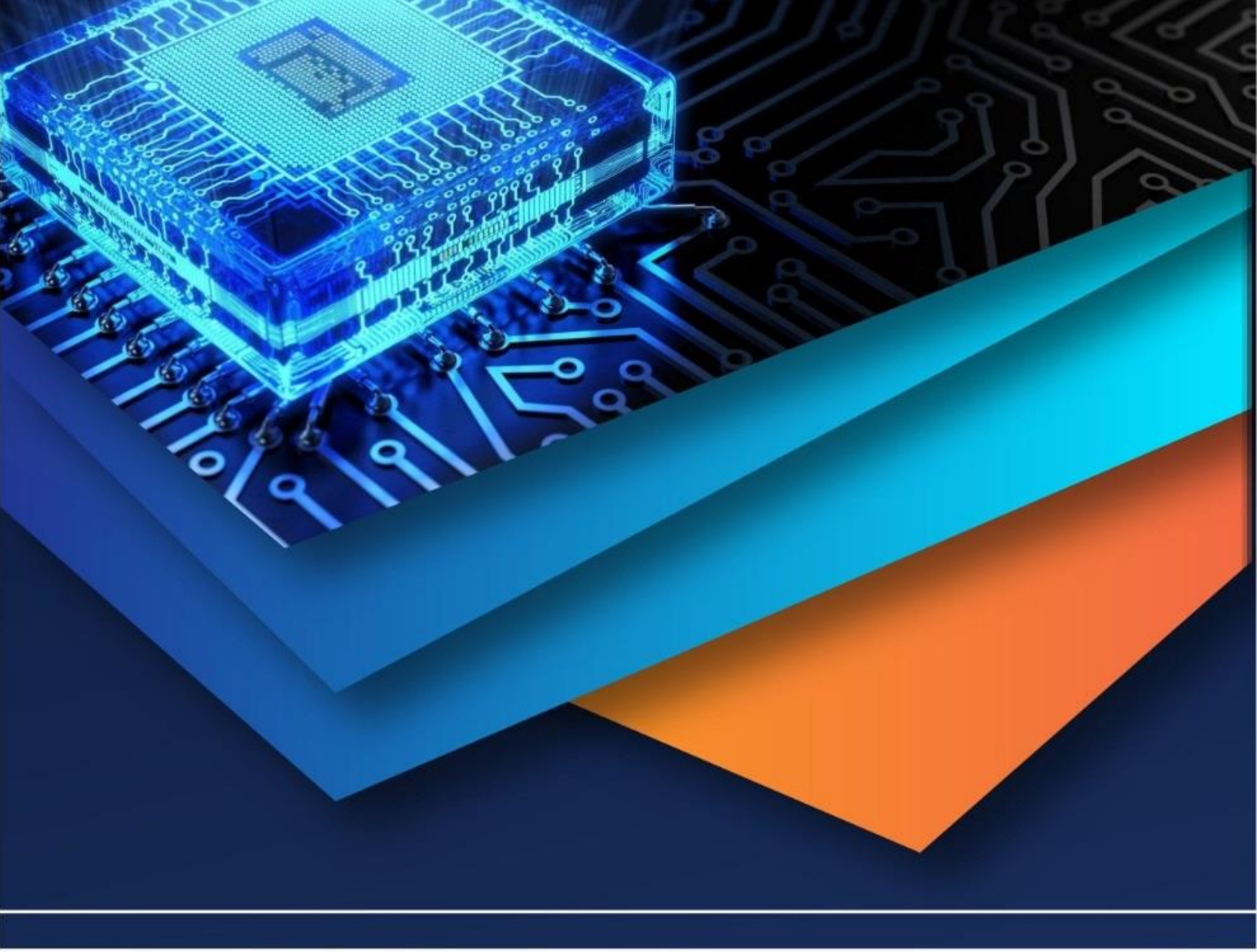
IV. CONCLUSION

In the present study zinc oxide nanoparticles were prepared from zinc acetate using Argemone Mexicana leaf extract by green synthesis method. The phytochemical analysis of AML extract was performed. The study reveals that wide numbers of phytochemical constituents are present in this plant like carbohydrates, phenols, flavonoids,, terpinoids, tannins, alkaloids, coumarins, quinines, fats and fixed oils.

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