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STUDY OF ANTHELMINTIC ACTIVITY OF *ARGEMONE MEXICANA* ROOTS AGAINST INDIAN EARTHWARM

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ABSTRACT

Mexicana is a prickly herbaceous plant with pinnately lobed leaves and a terminal, yellow bloom; the fruit is a thorny capsule. The stem is greenish. Under the microscope, the fresh leaf and the dry aerial parts were found to contain epidermal cells with actinocytic stomata, lacticifers, palisade cells, vascular bundle, fibers, and collenchyma cells. The presence of lignins, tannins, starch, calcium oxalate, oils, and proteins was detected by chemomicroscopy. Carbohydrates, alkaloids, tannins, flavonoids, saponins, sterols, and triterpenoids were detected by phytochemical screening. The moisture content (8.2%), total ash value (16.7%), acid-insoluble ash value (2.9%), water-soluble ash value (4.8%), ethanol-soluble extractive value (17.2%), and water-soluble extractive value (34.3%) were the physicochemical parameters that were observed. Also measured are six minerals: Fe, Cu, Mn, Mg, Pb, and Cd.

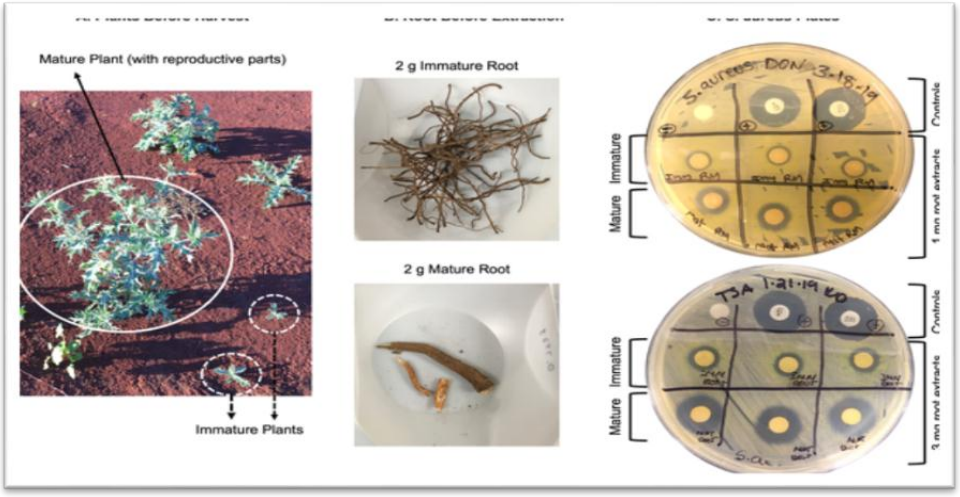
KEYWORDS: Argemone mexicana, Earthwarm, Methanol, Anthelmentic activity.

I. INTRODUCTION

One of the cosmopolitan species, *Argemone mexicana* L., has beautiful yellow flowers and spiky, hairless, branching branches with yellow juice. Origin of the binomial word: The term "argena" in "argemone" refers to an eye cataract; leaf juice was purportedly used to heal cataracts; mexicana is the Spanish word for Mexico plus the Latin suffix "ana," indicating the

nation of origin.[1] It is an upright herb with a diameter of up to 5 cm. The fruit is elliptic-oblong, spiky, and capsule-shaped. A delicate network of veins and oils covers the nearly spherical, brownish-black seeds, which have a diameter of approximately 1.0 to 1.2 mm.[2] *Argemone mexicana* has long been used in India to treat fever, wounds, worms, and malaria.[3] *Argemone mexicana*, also known as "Bozobo," "Nienidjeni," or "Sayi Bagani" in the region, is used to treat malaria.[4] This species is referred to as "Karanko," "Kwarkwaro," or "Kaki Ruwan Allah" in Hausa in northern Nigeria.[5] The powdered leaves were applied to swollen skin areas by Hausa traditional healers as a means of reducing inflammation.[6] The anti-inflammatory qualities of *Argemone Mexicana* are currently being studied in modern pharmacology. The World Health Organization states that traditional medicine is safe to use in treating illnesses brought on by both microbiological and non-microbiological causes.[7,8,9] The use of medicinal plants in the treatment of many human illnesses is crucial. Botany.[10,11,11] *Argemone mexicana* L., one of the most varied species, features stunning yellow flowers together with spiky, glabrous stalks adorned with yellow peppers. Binomial Origin: The Greek word "arena," which means "eye cataract," is the source of the word "argemone." The Latin term "mother" means "Mexico," denoting the juice's country of origin, and it is supposed to be used to treat cataracts.[12] Remedy plants are highly practical and appropriate for professional settings. Various human disorders were treated with dynamic plant substances that were discovered.[13] Useful plants should be available to humans. It is a means of leading a healthy, disease-free life. They are essential to preserving our health.[14] A member of the poppy family, the Mexican *Argemone mexicana* plant grows in tropical and subtropical regions. Often referred to as Mexican poppies or Mexican poppies, these plants are currently grown in Ethiopia, India, and the United States but were originally found in Mexico. Although there were about 20,000 known medicinal plants in India as of late, more than 500 medical organizations used more than 800 plants to treat a wide range of illnesses. Mexican ginkgo is frequently used to treat a wide range of illnesses in traditional medicine. Protein-dissolving compounds found in fresh yellow milkweed seed extract are useful in the treatment of warts, colds, skin conditions, itching and jaundice.[15]

Plant Profile



Botanical Name: ***Argemone Mexicana*.L**

Marathi Name: daruri, firangi-kote-pavola

Synonyms: Argemone leiocarpaGreene

Family: Papaveraceae

Geaographical source: *Argemone mexicana* L. (Papaveraceae) origins from Southwest USA and Northern Mexico but is today found in Australia, Spain, India and other countries in South-eastern Asia, as well to several African countries. In some of these countries it has become a serious weed problem

Taxanomy:

Kingdom: Plantae

Superdivision: Spermatophyta

Division: Magnoliophyta

Class: Magnliopsida

Subclass: Magnoliidae

Order: Papaverales

Family: Papaveraceae

Genus: Argemone

Species: Argemone Mexicana

Morphological characters

Parts used

Root: Argemone Mexicana plant the shade dry root was used to detect the anthelmintic activity.

Authentication

The plant sample was terminologically identified and authenticated at the herbarium of Department of Botony and Research Centre Arts, Science and commerce college, Indapur - 413106.

III. MATERIAL AND METHOD

A. Selection of plant

The fresh root of the plant will be collected from the Lakhewadi, Indapur, Maharashtra.

B. Authentication of Plant

The Plant was authenticated by head of department Mr. Dr. Mahadik B.B Dept of Botony and Research center Arts, Science and commerce College, indapur.

C. Extraction

Extraction of plant material by using combined method of soxhlet method.

D. Plant Material

1) The fresh roots of the plant was collected from the indapur city, Maharashtra

2) The roots are cleaned by washing with running water and shade dry and then milled to coarse powder by mechanical grinder.

E. Preparation of Extracts

1) The dried powdered root were extracted by soxhlet method.

2) Drug soxhlet for seven days with Methanol and simultaneously everyday 45 mins soxhlet extraction was carried out on the same extract.

3) On the 7th day the solvent portion was evaporated under reduced pressure.

4) The prepared extracts were kept under refrigeration for screening of anthelmintic activity.

Collection and Procurement

Roots of *Argemone maxicana* were collected from lakhewadi in pune district. Cleaned and dried at room temperature in shade and away from direct sunlight. The dried roots were coarsely powdered in morter pestle. Large difference in particle size of crude drug result in long extraction time as the course particle increase the extraction time and fine powdered material was sieved through 60-120 mesh to remove fines and large particles and the powder was subjected for further study. Authentication The plant sample was terminologically identified and authenticated at the herbarium of Department of and Research Centre Arts, Science and Commerce college, Indapur, - 413106

Preparation of plant extract

For assessment of in vitro study, the coarsely powdered leaves were subjected to solvent extraction (Soxhlet). 50gm of shade dried powder of *Argemone maxicana* were taken in hydroalcohol (methanol: water, 70:30) in 300ml conical flask. Allow to stand for 7 days with frequently shaking. After that filter it and concentrate on water bath and dried at room temperature and weigh accurately and store for further use.

In-vitro Anthelmintic activity

1) The anthelmintic activity was evaluated on adult Indian earthworm Phaeritima posthuma due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings.

2) The earthworms are collected and washed with normal saline with removal of fecal matter.

3) The earthworms are 5 to 6 cm length and 0.2- 0.3 cm widths were used for experiment protocol.

4) Ethanolic extracts that was prepared from *Argemone maxicana* leaves were examined systematically for their in-vitro anthelmintic activity against Phaeritima posthuma.

5) The in-vitro anthelmintic assay procedures was carried out. with slight modifications.

6) Five groups of equal size Indian earthworm consisting of six earthworms in each groups were released into 10 mg/ml, 20mg/ml, 30 mg/ml, 40mg/ml of desired formulation.

7) Each group was treated with one of the following: Vehicle, Piperazine citrate (20 mg/ml), and different extracts of in normal saline.

8) Observations was made for the paralysis time and subsequently for death time of the worms. The mean paralysis and/or death time for each group was recorded (each reading taken for 6 times). The time taken by the worms to become motionless, consider as paralysis was recorded and the lethal time was recorded by observing the time taken to become motionless on application of external stimuli by pricking with pin. Albendazole (100 mg/ml) was taken as reference drug.[16]

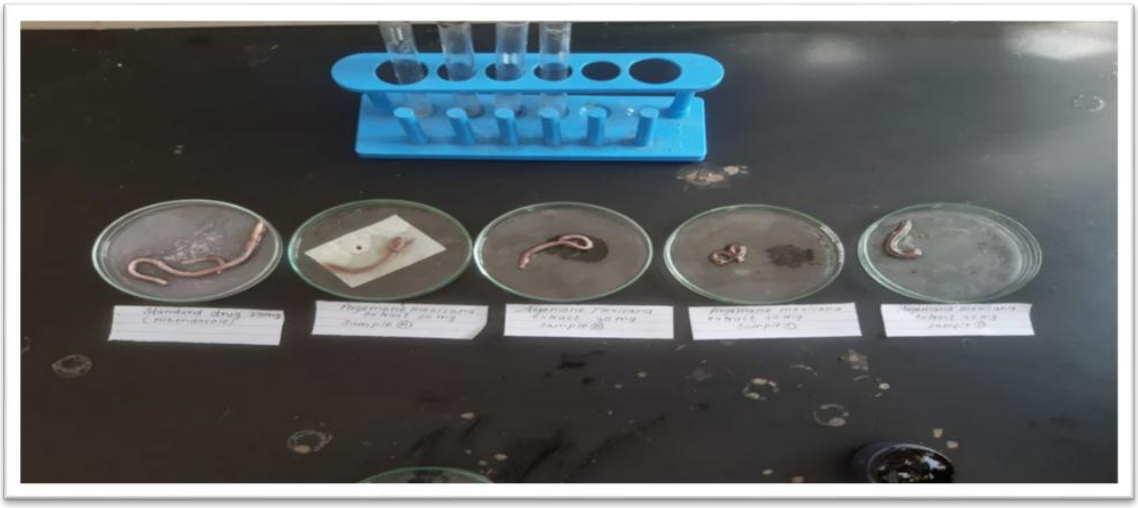
Parameters of Extracts

Phytochemical Analysis

Chemical Test

A. Test for Alkaloids	**Ethyi acetate extract**
1.Mayer's Test	+
2.Dragndroff's Test	+
3.Wagner's Test	+
4.Hager's Test	+
B. Test for Tannins 5% FeCl3	+
1.Anthraquinone Glycoside	+
2.Saponin Glycoside	–
3. Coumarin Glycoside	–
D. Test for Flavonoids	
1.Shinoda Test	+
2.Sulphuric Acid Test	+
E. Test for Carbohydrates	
1.Fehling's Test	–
2.Benedict's Test	–
A.Test for Resin	–
B. Test for Steroids	–
a.Libermann test	–
b.Salkowski test	-

Anthelmintic screening



Observations was made for the time taken to paralysis and death of individual worms. Time for paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Death was concluded when the worms lost their motility followed with fading away of their body.

Observation Table

Treatment	Concentration	Paralysis time(Min)	Death time(Min)
Vehicle	-	-	-
Albendazole	**20mg/ml**	**17sec**	**22sec**
Methanol	**10mg/ml**	**39sec**	**47.33sec**
Methanol	**20mg/ml**	**36.11sec**	**44.22sec**
Methanol	**30mg/ml**	**30sec**	**38sec**
Methanol	**40mg/ml**	**22sec**	**29sec**

RESULT

Three combined extract concentrations of 40mg/ml, 30mg/ml, 20mg/ml, and 10mg/ml were tested in an in vitro anthelmintic activity against Indian earthworms in the present study. The data reveals that the methanolic extract at a concentration of 40mg/ml showed both paralysis and death in 22 and 29 seconds. The potency of the extract was found inversely proportional to the time taken for paralysis or nature of the extract. The potency of the extract was found to be inversely proportional to the time taken for paralysis or the nature of the extract.

CONCLUSION

In conclusion the use of root of *Argemone maxicana* as an Anthelmintic activity have been confirmed as the root extract displayed activity against the worms used in the study methanolic extract of *Argemone maxicana* Showed Anthelmintic activity against the Pheritima posthuma. Dose dependant activity was noticed in all the bioassays. In the comparative study the methanolic extract of *Argemone maxicana* shows satisfacted anthelmintic activity.

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