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STUDY OF ANTIHELMINTIC ACTIVITY OF *CILTORIA TERNATEA* FLOWER AGAINST INDIAN *EARTHWORMS*

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ABSTRACT

Clitoria ternatea or commonly known as 'Butterfly pea' has been used traditionally in Ayurvedic medicine in which various parts of the plants are used to treat health issues such as indigestion, constipation, arthritis, skin diseases, liver and intestinal problems. The flowers of *C. ternatea* are used worldwide as ornamental flowers and traditionally used as a food colorant. *Clitoria ternatea* flower extracts were found to possess antimicrobial, antioxidant, anti-inflammatory, cytotoxic and antidiabetic activities which are beneficial to human health. *Clitoria ternatea* flower is a promising candidate for functional food applications owing to its wide range of pharmacotherapeutic properties as well as its safety and effectiveness. Butterfly pea *(Clitoria ternatea L.)* is an important perennial herbaceous plant with a range of uses as ornamental plants, fodder crops, medicine, and sources of natural food colorant and antioxidants. Development of anthelmintic resistance and high cost of conventional anthelmintic drugs led to the evaluation of medicinal plants as an alternative source of anthelmintics. The current study was aimed to evaluate the Possible anthelmintic effects of flower Extract of *Clitoria ternatea* Linn. Using of adult earth worm. Five concentrations (20, 10, 20, 30, 40 mg/ml) of extract were studied for the determination of Time of paralysis and death of the earth worms. Albendazole in same concentration as that of extra of flower *clitoria Ternatea* was Considered as standard reference and normal saline as control. The result of the present study reveals C showed paralysis and also caused death of worms especially at higher concentration Of as compared to standard reference Albendazole.

KEYWORD: *Clitoria ternatea*, anthelmintic, *earthworm*, paralysis, death, Albendazole.

INTRODUCTION

A large and increasing number of patients in the world use medicinal plants and herbs for health Purpose. Therefore, scientific scrutiny of their therapeutic potential, biological properties, and safety will be Useful in making wise decisions about their use.[1-2] There are hundreds of significant drugs and biologically Active compounds developed from the traditional medicinal plants. Plant showed wide range of pharmacological Activities including antimicrobial, antioxidant, anticancer, hypolipidemic, cardiovascular, central nervous, Respiratory, immunological, anti-inflammatory, analgesic antipyretic and many other pharmacological effects.[3-4] The Plant showed many pharmacological effects including antioxidant, hypolipidemic, anticancer, anti-Inflammatory, analgesic, antipyretic, antidiabetic, CNS, antimicrobial, gastro-intestinal antiparasitic, Insecticidal and many other pharmacological effects. This Review will highlight the chemical constituents and Pharmacological effects of Clitoria ternatea. It is a perennial twinning herb; stems terete, more or less pubescent. Leaves are imparipinnate; 5-7 leaflets, found in white flowered and blue flowered varieties. Natural habitat to tropical and subtropical region, known as the aparajita. This plant is used as laxative, diuretic, brain tonic, antiulcer, in the treatment of headache and snakebite[5,6] Plant shows the significant activities like immunomodulary, antistress, antidepressant, analgesic, anti-inflammatory, antipyretic effects[7,8] and increase in memory. Also the anthocynanins, flavonoids and flavanol glycosides were isolated. Literature survey indicates that no systematic studies were carried out to evaluate the anti-parasitic potential. The blue color of Its Flower petals is commonly utilized as natural food colorant, especially in Southeast Asia countries such As Malaysia and Thailand[9] It has been used in the Indigenous system of medicine for cooling, acrid, Purgative, diuretic, laxative, anthelmintic, anti-ulcer Properties. In animal tests, the methanolic extract of *Clitoria ternatea* roots demonstrated nootropic, Anxiolytic, antidepressant, antistress and learning Enhancing activity.[10] The flower can either be single or paired With colour ranging from white, mauve, light Blue to dark blue and the size is 9 mm long[11] Pedicles can grow to 4-9 mm long and Bracteoles are around 12 mm long, broadly Ovate or rounded. The campanulate calyces can Grow to 2.2 cm long (max). The flower lobes Can either be oblong or triangular where it can Grow up to 1cm long and is acute or acuminate. The flower lobes Can either be oblong or triangular where it can Grow up to 1cm long and is acute or acuminate. Besides that, the standard flower is 2-4 cm Wide funnel-shaped, rounded or with notched Apex, and can reach

to 5.5 cm long.[12] The flower can either be single or paired with colour ranging from white, mauve, light blue to dark blue and the size is 9 mm long[13] In Ayurveda medicine, *Clitoria ternatea* is Considered as a nootropic herbs (Medhya-Rasayana) comprising herbs such as Conscora Decusata (Gentianaceae), Evolvulus alsinoides (Convolvulaceae) and Convolvulus pluricauli (Convolvulaceae). Ecologically, the butterfly pea flower Commonly prefers full sunlight, however Sometimes partially shaded is more favourable. Seeds can be germinated by soaking them in Water overnight.[14]

Plant Profile

Fig.: Flower of Ciltoria Ternatea.

Botanical Name: Ciltoria Ternatea

Synonyms: Clitoria albiflora Mattei, Clitoria bracteata Poir., Clitoria mearnsii De Wild., Clitoria tanganicensis Micheli, Clitoria zanzibarensis Vatke.[15]

Common Name

Common Name In Various Country

India: ShankhaPushp, Gokharna, Aparajita, Koyal, Girikarnika, Vishnukrantha, Kakkanam

Arabic: Mazerion Hidi, Baslat el-Zuhoor

Chinese: Die dou

English: Blue-pea, Bluebellvine, butterfly-pea, cordofan-pea Darwin-pea French: honte

German: Blaue Klitorie Portuguese: clitória-azul, clitória;

Spanish: Conchitas papito, azulejo, zapatico de la reina, zapotillo; Swedish: himmelsärt;

Telugu: Dintena.[16]

Geographical Source

This plant is native to equatorial Asia, including locations in South Asia and Southeast Asia but has also been introduced to Africa, Australia and the Americas.

Taxonomic Classification

Kingdom: Plantae

Subkingdom: Viridaeplanta Infrakingdom: Streptophyta Division: Tracheophyta

Subdivision: Spermatophytina Infrodivision: Angiospermae Class: Magnoliopsida

Superorder: Rosanae Order: Fabales;

Family: Fabaceae

Genus: Clitoria L.; Species: Clitoria ternatea[16]

Morphology Characters

Flower: *Ciltoria Ternatea* plant the shade dry flower 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.

MATERIAL S METHOD

- **Selection Of Plant**

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

- **Collection s Procurement**

Flower of *Ciltoria ternatea* were collected from lakhewadi in pune district. Cleaned and Dried at room temperature in shade and away from direct sunlight. The dried flowers ere 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.

Fig.: Dried Flowers Of Ciltoria Ternatea.

- **Authentication of Plant**

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

- **Extraction**

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

- **Plant Material**

1. The fresh flowers of the plant was collected from the Indapur city, Maharashtra
2. The flower cleaned by washing with running water and shade dry and then milled to Coarse powder by mechanical grinder.

- **Preparation of Extracts**

1. The dried powdered flowers extracted by soxhlet method.
2. Soxhlet Extraction combined out by using solvent Methanol
3. After Extraction filter portion is evaporated on water bath.

Fig.: Extraction of Ciltoria Ternatea.

4. After evaporated extract was dried on room temperature at hot air oven.

In-vitro Antihelmintic 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* were collected and washed with normal saline for removal of fecal matter.
3) The *earthworms* used in experiment are 5 to 6 cm in length and 0.2- 0.3 cm in widths, were used for experiment.
4) The extract of flowers C Methanol was prepared from *Clitoria Ternatea* flowers were examined Systematically for their in-vitro anthelmintic activity against Phaeritima posthuma.

Fig.: Adult Indian *earthworm* Phaeritima posthuma.

5) The in-vitro anthelmintic assay procedures was carried out. With slislight 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, Methanol (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 5 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.

Fig.: In-Vitro Anthelmintic Activity on Adult Indian *Earthworm* Phaeritima Posthuma.

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.

Observations Table

Treatment	Concentration	Paralysis time (min)	Death Time(min)
Vehicle			
Albendazole	20mg/ml	6 sec	18.20 sec
Methanol	10mg/ml	10 sec	30 sec
Methanol	20 mg/ml	11 sec	28 sec
Methanol	30 mg/ml	12 sec	25 sec
Methanol	40 mg/ml	15 sec	24 sec

RESULT

Three 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 15 and 24 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 flower of *Clitoria Ternatea* as an Anthelmintic activity have been Confirmed as the flower extract displayed activity against the worms used in the study Methanolic extract of *Ciltoria Ternatea* Showed Anthelmintic activity against the Pheritima

posthuma. Dose dependant activity was noticed in all the bioassays. In the Comparative study the methanolic extract of *Ciltoria Ternatea* shows satisfacted Anthelmintic activity.

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