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A study on Evaluation of Anthelmintic Activity of Canavalia Ensiformis (Jack bean) pods

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Abstract: - Various species of canavalia Ensiformis have been extensively studied for their Nutritional evaluation. Canavalia Ensiformis is expected to possess many constituents among them tannins, saponins are major constitutes.so due to presence of tannins Canavalia Ensiformis may possess Anthelmintic activity. In present work Metabolic and Aqueous extract of pods of canavalia Ensiformis were evaluated for its Anthelmintic activity against earthworm at four different concentration1, 2, 5, 10 mg/ml. The Anthelmintic activity of aqueous extract and Methanolic extract was comparable with standard drug (Piperazine Citrate 1mg/ml). Worms are collected and washed with normal saline solution and kept in phosphate buffered saline solution pH 7.5 to 8.0 until further use. Standard drug solution was prepared in Distilled water. Activity was evaluated by the time required for paralysis and death of worms by extracts. The data shows Methanolic extract possess comparable Anthelmintic activity with standard drug. The result shows that the plant has the potential to be used as Anthelmintic.

Key Words —*Canavalia Ensiformis, Anthelmintic Activity, Earthworms, Flatworms.*

I. INTRODUCTION

Canavalia Ensiformis commonly known as (Jack bean) or in Marathi known as Abai. Which is not official in Ayurvedic pharmacopoeia.it is one of the excellent plant for human being made and gifted by the nature having composition of all the essential constituents that are required for normal and good human health. The flavonoids we're found to have antimicrobial activity. The phytochemical investigation on Canavalia Ensiformis have revealed the presence of tannins, saponins, flavonoids, cardiac glycosides. It is also good source of mineral and acid. The seeds of canavalia Ensiformis contain canavalin A. Canavalia ensure also used to treat vomiting, obesity, stomach ache and inflammatory disease but proper scientific studies have not been much reported for this plant especially for an. Anthelmintic perspective. In present work Methanolic and aqueous extract of canavalia Ensiformis pods evaluated for Anthelmintic activity against Earthworms and Flatworms. The activities of extract we're compared with standard drug Piperazine Citrate.

II. EXPERIMENTAL WORK

A. Material and Method:

Collection and Identifications of pods:

Pods of canavalia Ensiformis were collected from local grocery market Nashik, Maharashtra, India. The identification of plant was done at KTHM College Nashik, Maharashtra.

Pretreatment of Pods:

The pods were initially washed with simply water then dried in sunlight under shade for 20-25 days until pods becomes completely dry. The dried pods were taken for further extraction procedure.

Preparation of Aqueous Extract:

Accurately weighed 100 gm powder taken in stainless steel vessel and mixed with 500ml distilled water the mixture was boiled for about 3 hours using gas burner. Filtration of mixture was carried out. Filtrate was taken into a beaker and evaporated until it converted into semisolid concentrate liquor. After that it was dried completely to get dried residue of the extract we're collected by using same method describe in preparation of Methanolic extract.

Preparation of Methanolic Extract:

Take 60 gm of powder of drug was packed in thimble flask and 550 ml of Methanol was added in 1 liter round bottom flask the soxhlet assembly was set up the extract was filtered and filtrate was concentrate up to 50ml using water-bath. Filtration of mixture was carried out. Filtrate was taken into a beaker and evaporated until it converted into semisolid concentration liquor after that it was dried completely to get dried residue, which can be used to prepare the stock solution (w/v) and the %yield would be 12.2%w/w and stored in the freezer until further use.

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III. Screening Of Anthelmintic Activity

The Anthelmintic activity of pods extract of canavalia Ensiformis has been evaluated by on adult Indian Earthworm.it was collected during rainy season. Worms are collected and washed with normal saline solution and kept in phosphate buffered saline solution pH 7.5 to 8.0 until further use. All the working solution are freshly prepared before start of experiment. Take actively moving earthworms placed k Petri dishes at room temperature 25°C to 30°C. Containing 1mg/ml,2mg/ml,5mg/ml,10mg/ml of Aqueous and Methanolic extract in a phosphate buffer saline solution positive and negative controls with Piperazine citrate. Three replicate should be done for each concentration o and observation made at 1,2,3,4,5,6,7 and 12 hours of time to get paralyzed and finally die for all the worms. After each of the experiment groups the respective extract concentration solution was discarded and number of alive and dead worms in each concentration was counted the worms counted as dead when they lost their motility permanently and did not recover even after placing in phosphate buffer saline solution. Paralysis was followed by fading away of the body color of the dead worms.

IV. Result And Discussion

The result in table 1 shows that the time taken for paralysis and death of worms after treating with the test substance. The activity was comparable with standard drug Piperazine citrate. Methanolic and aqueous extract both shows significant Anthelmintic activity against Earthworms. Methanolic extract found to be more active as compared to water extract the ME extract demonstrated paralysis as well as death of worms in comparative good time as compared to Piperazine Citrate especially at high concentration of 10mg/ml in case of canavalia Ensiformis. While water extract shows significant activity phytochemical analysis of the crude extract revealed presence of Tannins, Saponins, and flavonoids. The tannins are known to have Anthelmintic activity.

V. Conclusion

In conclusion the use of pods of canavalia Ensiformis as Anthelmintic have been confirmed as the pods extract displayed activity against the worms in the study.

Fig.1. Phosphate Buffer PH 7.5

Fig.2. Aqueous extract (Live Stage).

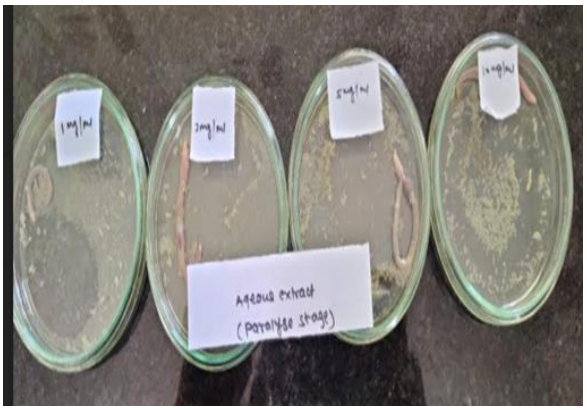

Fig .3. Aqueous Extract (Paralyze Stage).

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Fig .4. Methanolic Extract (Death Stage).

Fig.5. Aqueous Extract (Death Stage).

Fig. 6. Standard Piperezine Citrate (Live stage).

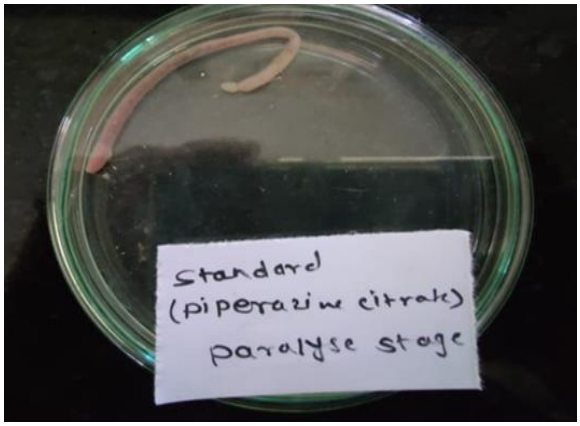

Fig .7. Standard Piperazine citrate (Paralyze Stage).

Table1:

Treatment	Conc.mg/ml	Paralysis time(min) (Mean ± SEM)	Death time (min) (Mean ± SEM)
Control	_	0.0	0.0
Piperazine Citrate	1	32±2.3	57.3±5.5
Aqueous Extract	1	140.0±1.1	178.7±1.9
	2	159.7±2.0	198.0±2
	5	83.3±0.9	119.0±2.6
	10	109.3±1.8	154.3±1.2
Methanolic Extract	1	120.0±1.1	160.7±1.8
	2	139.0±0.6	175.3±2.0
	5	66.0±1.5	96.0±2.1
	10	100.3±0.9	147.7±3.5

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