



PHYTOCHEMICAL PROPERTIES AND ANTHELMINTIC ACTIVITY OF *VIGNA UNGUICULATA* LINN.

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ABSTRACT

Vigna unguiculata Linn belonging to family Fabaceae are used traditionally as appetizer, diuretic, laxative, anthelmintic. Seeds are coarse powdered and exhaustively with hot solvent (Soxhlet) extraction by ethanol and maceration with chloroform water I.P. Five concentrations (10-100 mg/ml) of ethanolic and aqueous extracts were studied for anthelmintic activity by using *Eudrilus euginae* earthworms. Both aqueous and ethanolic extracts showed paralysis and death of worms in concentration (10-100 mg/ml) dependent manner. Alcoholic extract of *Vigna unguiculata* showed significant activity than aqueous extract. Piperazine citrate (10 mg/ml) and distilled water were included in the assay as standard drug and control respectively. The result showed seeds of *vigna unguiculata* possessed potential anthelmintic activity. The seeds extract also showed presence of flavonoids, and glycosides by preliminary phytochemical investigations.

KEYWORDS: *Vigna unguiculata*, seeds, anthelmintic, *Eudrilus euginae*, Piperazine citrate.

INTRODUCTION

Medicinal plants being an effective source of both traditional and modern medicines are genuinely useful for primary healthcare. Plants have rich source of medicines because they produce wide range array of bioactive molecules¹.

The *vigna* is one of the important genus of grain legumes which forms the source of dietary protein². Cow pea is one of the ancient crops known to man. It is cultivated around the primary for seed, but also as a vegetables, cover crop and fodder. Its grain is rich in protein and digestible carbohydrate³.

In Cambodia the pulse is considered antibilious and prescribed in liver complaints with jaundice. Seeds are used to strengthen the stomach and is considered a good food and destroy worms in the stomach. The seeds and the pod refuse are used medicinally in china and Malaya⁴. Fruits are upto 90cm long, slightly depressed between the seeds and vary in size, shape and colour. The seeds are useful in astringent, appetizer, laxative, anthelmintic, aphrodisiac, diuretic, galactogue, liver tonic. They are also useful in vitiated conditions of kapha and pitta anorexia, constipation, helminthiasis, general debility⁵. The present study was undertaken to evaluate the anthelmintic activity of the seeds of *Cow pea* in a scientific manner.

MATERIALS AND METHODS

The seeds of *V. unguiculata* were collected from local areas of Belgaum, Karnataka state and authenticated by botanist, Prof. R. S. Goudar. R.L. Science Institute, Belgaum, Karnataka. (Herbarium voucher no. SATR/2007-08)

Preparation of extracts

The powdered material was exhaustively with ethanol using soxhlet extraction apparatus. The extract was concentrated in vacuum to a syrup consistency. The percentage yield of extract was found to be 4.46 %. For the preparation of aqueous extract the dried powder 100gm were kept for maceration with 1000ml of distilled water for 24hrs. The extract was double filtered by using muslin cloth and whatmann no filter paper and concentrated by evaporation on water bath. The percentage yield of extract was 5.48 %⁶.

Phytochemical screening

Phytochemical screening of the seeds extracts were carried out as per the method and tests to decipher the presence or absence of various phytocompounds⁷.

Worms collection and authentication

The Australian earth worms *Eudrilus euginae* was collected and authenticated by department of zoology from K.L.E.S's school of agricultural training and research, Lingaraj college campus, college road, Belgaum, Karnataka state.

Anthelmintic activity

Sample for the anthelmintic study were prepared by dissolving 2.5g of dried crude extract in 25 ml of 1% Tween 80 prepared in normal saline to obtain a stock solution of 100 mg/ml. From this stock solution, different dilutions were prepared to get a concentration range of 10, 25, 50, 75, and 100 mg/ml.

The anthelmintic activity was evaluated on adult Australian earthworms *Eudrilus euginae* obtained from Horticulture Department. The method of Mathew et al and Dash et al^{8, 9, 10} was followed for anthelmintic screening twelve groups; each consisting of six earthworms of approximately equal size were released in to the 50 ml prepared samples at room temperature.

Each group was treated with one of the following: vehicle (1% Tween 80 in normal saline), piperazine citrate (10 mg/ml) and extracts (10, 25, 50, 75, 100 mg/ml) in normal saline containing 1% Tween 80. Observations were made for the time taken for paralysis and/or death of individual worms. The mean paralysis time and mean lethal time for each extract was recovered. Paralysis was said to occur when the worms did not revive in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body colour.

RESULTS AND DISCUSSION

The present investigation reveals that the ethanolic extract of *V. unguiculata* was more potent followed by aqueous extract when compared to reference control Piperazine citrate. The extracts caused paralysis followed by death of the worms at all tested dose levels. The potency of the extracts was found inversely proportional to the time taken for paralysis/death of

worms. The activity confirms the dose dependent nature of the extracts.

Table-I represents the phytochemical compounds recovered from the extracts of the plant seeds in which alkaloids were absent.

Flavonoids and saponins were shown to produce anthelmintic activities¹². It indicates that all these phytochemical and interaction all that chemicals might be resulted in synergistically enhanced therapeutic efficacy of anthelmintic activity¹³.

The anthelmintic activity observed could be due to the presence of secondary metabolites, which have been reported as active constituents responsible for anthelmintic activity.

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Table 1: Phytochemical screening of seeds of *Vigna unguiculata*

	Tests	Seed of <i>Vigna.unguiculata</i>
1.	Glycosides	+
	Tannins	+
2.		
3.	Flavonoids	+
4.	Alkaloids	-
5.	Saponin glycosides	+
6.	Sterols	+

Table-II: Anthelmintic Activity of seeds extracts of *V.unguiculata*

Groups	Concentrations(mg/ml)	Time taken for paralysis (min)	Time taken for death (min)
Aqueous extract	10	38 ± 1.05	63 ± 1.05
	25	27 ± 0.47	49 ± 0.97
	50	19 ± 0.66	38 ± 1.08
	75	11 ± 0.60	29 ± 0.48
	100	6 ± 0.41	18 ± 0.67
Ethanol extract	10	36 ± 1.07	61 ± 1.07
	25	23 ± 0.76	45 ± 0.71
	50	17 ± 0.59	33 ± 0.42
	75	9 ± 0.47	24 ± 1.52
	100	5 ± 0.40	14 ± 0.60
Piperazine citrate	10	22 ± 1.09	14 ± 0.77
Control	-	-	-

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