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Invitro comparitive anthelminic activity of *Evodia Lunu-Ankenda* (Gaertn) Merr. bark and Abutilon Indicum (Linn.) sweet leaves

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ABSTRACT

In this paper, Anthelminic Activity of Evodia Lunu-ankenda (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves. The ethyl acetate and aqueous extract obtained from Evodia Lunu-ankenda (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves was determined by two methods Earth worm and Round worm. Both extracts of Evodia lunu-ankenda (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves showed significant and dose dependent activity compare to standard drug albendazole. Among them the ethyl acetate extract of Evodia lunu-ankenda (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves showed better activity.

Key words: *Evodia Lunu-ankenda* (Gaertn) Merr. Bark, Abutilon Indicum (Linn.) Sweet leaves, ethyl acetate extract, aqueous extract, Anthelminic Activity.

INTRODUCTION

Evodia lunu-ankenda (Gaertn) Merr. bark (Rutaceae) available throughout central and south India, in most dry stony hills and black cotton soil. Along the margin of evergreen forests upto 1400 m. Trees ca.10m tall. Bark grey, corky when mature; blaze Brownish. Leaves compound, trifoliate, opposite, decussate; rachis 3.5-11 cm long, minutely pubescent when young, pulvinate; petiolule 0.6-11 cm long, canaliculate, slightely pubscent ; leaflets 7-20X3-8.5 cm (usually larger in saplings) elliptic to obovate, apex acuminae, base assymetric, or slightly

attenuate, argin entire chartaceous, glandular unctate, glabrous shining above; midrib slightly canalicualte; secondarynerves 7-16 pairs, straight or gradually curved; tertiary nerves slender, broadly reticulate. Inflorescence spreading panicled cyme. Flowers greenish white, sessile. Follicles, 4-valved; 1- seeded cocci, black[1-2]. Abutilon Indicum (Linn.) Sweet is a cosmopolititan genus of 150 species belonging to the family Malvaceae. Distributed throughout the tropical and sub- tropical region, some species like A.marmoratum, A.striatum, A.thompsonii etc, are ornamental grown in India. Abutilon indicum (Linn.) sweet is a herbaceous or shrubby. Softly tomentosa perennial plant abundantly found as a weed in the sub- Himalayas tract and other hills, and other part of India[3] . In the present study, we report the anthelminic activities of ethyl acetate extract of Evodia *lunu-ankenda* (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves. A review of the literature revealed that the anthelminic activities of the plant.

MATERIALS AND METHODS

Extraction procedure [4-5]

The barks of *evodia lunu-ankenda* and leaves of Abutilon Indicum were shade dried under shade and then made in to a coarse powder with a mechanical grinder. The passed through sieve no 40 and stored in air tight container for further use. The bark (500mg) and the leaves (500mg) was extracted with ethyl acetate and distilled water in a soxhlet apparatus (48 hrs) the extract was concentrated by distillation under reduced pressure using rotary flash evaporator.

Selection of worms[6-7]

Adult Indian Earth worm -*Eudrillus eugeniae* and Round worm - *Ascaris lumbricoids having* anatomical and physiological resemblance with intestinal earth worm and round worm parasite of the human being.

Grouping of Worms

The experimental design of the investigation was carried out in eleven groups with six worms in each group and carried out in the following regimes.

Group I	Normal saline.
Group II	Albendazole 25 mg/ml.
Groups III	Albendazole 50 mg/ml
Groups IV	Albendazole 100 mg/ml
Groups V	Evodia lunu- ankenda ethyl acetate extract 25mg/ml
Group VI	Evodia lunu- ankenda ethyl acetate extract 50 mg/ml
Group VII,	Evodia lunu- ankenda ethyl acetate extract 100mg/ml
Group VIII	Evodia lunu- ankenda aqueous extract 25mg/ml
Group IX,	Evodia lunu- ankenda aqueous extract 50mg/ml
Group, X	Evodia lunu -ankenda aqueous extract 100mg/ml
Group XI	. Abutilon Indicum ethyl acetate extract 25mg/ml
Group XII	Abutilon Indicum ethyl acetate extract 50mg/ml
Group XII I	Abutilon Indicum ethyl acetate extract 100mg/ml
Group XIV	Abutilon Indicum aqueous extract 25mg/ml
Group XV	Abutilon Indicum aqueous extract 50mg/ml
Group XVI	Abutilon Indicum aqueous extract 100mg/ml

Evaluation of anthelminic activity [8-12]

The standard Albendazole and the test solutions of *Evodia lunu-ankenda* (Gaertn) Merr. bark**,**

Abutilon Indicum (Linn.) Sweet leaves (25, 50, 100 mg/ml) were evaluated for anthelmintic activity. Observations were made for the time taken for paralysis and death of individual worms up to four hours of test period. The mean paralysis time and mean lethal time of each extract was recorded. Paralysis was said to be occurred when worms did not revive even in normal saline. Death was concluded when worm lost their motility followed with fading away of their body color ***(Table: 1 to 4)***

Table.1 Anthelmintic activity of various extracts of *Evodia Lunu-Ankenda* (Gaertn) merr. bark against earth worms- *Eudrillus Eugeniae*

Drug	Time taken for paralysis (In min)* ± SEM	Time taken for death (In min)* ± SEM
Albendazole		
25 mg/ml	19.52 ± 0.42	34.00 ± 0.58
50 mg/ml	14.83 ± 0.87	27.23 ± 0.49
100 mg/ml	11.00 ± 0.58	22.17 ± 0.95
Ethyl acetate leaf extract		
25mg/ml	22.00 ± 0.58	40.00 ± 0.36
50 mg/ml	18.00 ± 0.36	33.83 ± 0.30
100 mg/ml	17.00 ± 0.36	28.16 ± 0.48
Aqueous leaf extract		
25mg/ml	28.00 ± 0.58	50.33 ± 0.73
50 mg/ml	25.33 ± 0.42	40.83 ± 0.67
100 mg/ml	21.16 ± 0.31	36.17 ± 0.40

Table.2 Anthelmintic activity of various extracts of Abutilon Indicum (Linn.) sweet leaves against earth worms- *Eudrillus Eugeniae*

Drug	Time taken for paralysis (In min)* ± SEM	Time taken for death (In min)* ± SEM
Albendazole		
25 mg/ml	10.67 ± 0.44	17.66 ± 0.55
50 mg/ml	9.053 ± 0.53	15.00 ±0.36
100 mg/ml	6.50 ± 0.53	11.17 ± 0.27
Ethyl acetate bark extract		
25mg/ml	15.00 ± 0.36	22.00 ± 0.26
50 mg/ml	11.00 ± 0.36	16.83 ±0.31
100 mg/ml	7.67 ± 0.56	14.00 ±0.58
Aqueous bark extract		
25mg/ml	20.17 ± 0.50	26.00 ± 0.58
50 mg/ml	18.00 ± 0.58	20.67 ±0.42
100 mg/ml	13.66 ± 0.58	16.00 ±0.52

Table.3 Anthelmintic activity of various extracts of *Evodia Lunu-Ankenda* (Gaertn) Merr. bark against round worms- *Ascaris Lumbricoids*

Drug	Time taken for paralysis (In min)* ± SEM	Time taken for death (In min)* ± SEM
Albendazole		
25 mg/ml	29.82 ± 0.31	50.15 ± 0.73
50 mg/ml	26.04 ± 0.42	40.20 ± 0.32
100 mg/ml	24.45 ± 0.52	39.42 ± 0.51
Ethyl acetate bark extract		
25mg/ml	37.05 ± 0.42	54.20 ± 0.32
50 mg/ml	21.68 ± 0.32	29.30 ± 0.46
100 mg/ml	14.55 ± 0.42	20.42 ± 0.86
Aqueous bark extract		
25mg/ml	42.06 ± 0.44	30.60 ± 0.02
50 mg/ml	37.67 ± 0.32	42.40 ± 0.56
100 mg/ml	32.33 ± 0.76	34.30 ± 0.32

Table.4 Anthelmintic activity of various extracts of *Abutilon Indicum (Linn.*) sweet leaves against round worms- *Ascaris Lumbricoids*

Drug	Time taken for paralysis (In min)* ± SEM	Time taken for death (In min)* ± SEM
Albendazole		
25 mg/ml	37.83 ± 0.31	88.00 ± 0.58
50 mg/ml	20.83 ± 0.30	61.83 ± 0.48
100 mg/ml	50.83 ± 0.48	51.53 ± 0.95
Ethyl acetate bark extract		
25mg/ml	41.00 ± 0.36	97.50 ± 0.53
50 mg/ml	30.33 ± 0.42	70.67 ± 0.67
100 mg/ml	21.17 ± 0.52	62.67 ± 0.33
Aqueous bark extract		
25mg/ml	52.17 ± 0.60	101.83 ± 0.58
50 mg/ml	37.67 ± 0.67	79.00 ± 0.58
100 mg/ml	32.33 ± 0.66	75.02 ± 0.55

RESULTS AND DISCUSSION

Evodia lunu-ankenda (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves solutions exhibited anthelmintic activity in dose-dependent manner giving shortest time of paralysis and death with 100mg/ml concentration for earth worms- *eudrillus eugeniae*. The *Evodia lunu-ankenda* (Gaertn) Merr. Bark ethyl acetate extract solution causes paralysis within 7.67min and time of death14.00 min and *Evodia lunu-ankenda* (Gaertn) Merr. Bark aqueous extract solution causes paralysis with in 13.66 min and time of death 16.00 min. The Abutilon Indicum (Linn.) Sweet leaves ethyl acetate extract solution shows paralysis within 17.00 min and time of death

28.16 min and Abutilon Indicum (Linn.) Sweet leaves aqueous extract solution shows paralysis within 21.16min and time of death 36.17.

Evodia lunu-ankenda (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves solutions exhibited anthelmintic activity in dose-dependent manner giving shortest time of paralysis and death with 100mg/ml concentration for round worms- *ascaris lumbricoids* against *Evodia lunu-ankenda* (Gaertn) Merr. Bark ethyl acetate extract solution causes paralysis within 14.55 min and time of death 20.42 min and *Evodia lunu-ankenda* (Gaertn) Merr. Bark aqueous extract solution causes paralysis with in 32.33 min and time of death 34.30 min. The Abutilon Indicum (Linn.) Sweet leaves ethyl acetate extract solution shows paralysis within 21.17 min and time of death 62.67 min and Abutilon Indicum (Linn.) Sweet leaves aqueous extract solution shows paralysis within 32.30 min and time of death 75.02.

The *Evodia lunu-ankenda* (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves ethyl acetate extract solutions exhibited anthelmintic activity (100mg/ml) was found to be most potent among the all solutions. The vehicle treated earthworm was found to be unaffected even after four hours.

The present study was undertaken to validate the Ethanobotanical claim *Evodia lunu-ankenda* (Gaertn) Merr. Bark and Abutilon Indicum (Linn.) Sweet leaves having potent anthelmintic activity compared to standard drug Albendazole. In future, it will be interesting to isolate the possible phytoconstituents that may be responsible for the anthelmintic activity

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