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**EVALUATION OF ANTHELMINTIC ACTIVITY OF LEAF AND BARK OF *NEOLAMARCKIA CADAMBA* (ROXB.) BOSSER**

**Pushpangadhan Parakkil<sup>1\*</sup> & AS William Arputha Sundar<sup>2</sup>**

<sup>1</sup>Sun Rise University, Bagdad Rajput, Teh. Ramgarh. Dist. Alwar 301030, Rajasthan, India.

<sup>2</sup>Sun Rise University, Bagdad Rajput, Teh. Ramgarh. Dist. Alwar 301030, Rajasthan, India.

**ABSTRACT**

Anthelmintics are a class of antiparasitic medications that work by stunning or killing parasitic worms (helminths) and other internal parasites to expel them from the body without inflicting major harm to the host. The anthelmintic activity of *Neolamarckia cadamba* (Roxb.) Bosser leaf and bark extract was investigated using the R.G.mali et al. method. al. Because of their morphological and physiological similarities to human intestinal parasites, the anthelmintic activity of adult Indian earthworms, round worms, and tapeworms was tested. Pharmacological investigations of the various extracts revealed that they all had anti-anthelmintic efficacy to differing degrees.

**Keywords:** *Anthelmintics, Neolamarckia cadamba, Antimicrobial.*

**INTRODUCTION**

Anthelmintics or antihelminthics are a group of antiparasitic drugs that expel parasitic worms (helminths) and other internal parasites from the body by either stunning or killing them and without causing significant damage to the host. They may also be called vermifuges or vermicides. Anthelmintics are used to treat people who are infected by helminths, a condition called helminthiasis. These drugs are also used to treat infected animals.

Pills containing anthelmintics are used in mass deworming campaigns of school-aged children in many developing countries [1].

**EXPERIMENT**

**Plant material**

The plant *Neolamarckia cadamba* (Roxb.) Bosser belonging to family Rubiaceae is widely found throughout India along road sides as well as on hill areas up to a height of 2000 meters. In Andhrapradesh, these are found in Thirumala, Chittoor, A.P District.

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Corresponding Author

**Pushpangadhan Parakkil**

Email id: aspirant09@gmail.com

For our work the plant *Neolamarckia cadamba* (Roxb.) Bosser was collected from Thirumala, which is about 300 km away from Dharmapuri.

**Extract preparation**

The dried coarse powdered of leaf and bark of *Neolamarckia cadamba* (Roxb.) Bosser were subjected to hot extraction method using solvents alcohol and water.

**Phytochemical screening**

The dried coarse powdered of leaf and bark of *Neolamarckia cadamba* (Roxb.) Bosser extracts obtained were subjected to chemical tests to find out the active constituents which showed the presence of alkaloids, saponins, steroids, triterpenoids [2].

**Drugs and chemicals**

Albendazole.

**IN VITRO ANTHELMINTIC ACTIVITY**

The anthelmintic activity of leaf and bark extract of *Neolamarckia cadamba* (Roxb.) Bosser was studied by using the method of R.G.mali et. al. The anthelmintic activity was evaluated on adult Indian earthworm, round worm and tapeworm due to its anatomical and

physiological similarity with the intestinal parasites of human being.

**Preparation of test sample**

Sample for the anthelmintic activity were prepared by dissolving the dried extract in 1 % gum acacia in normal saline. Albendazole was used as reference standard for anthelmintic activity.

**Method**

Five groups of approximately equal size earthworm, roundworm and tapeworm consisting of six worms in each group were released in 50 ml of desired formulation. Each was then treated with one of the following.

Vehicle (1% gum acacia in normal saline), Albendazole (25, 50, 100 mg/ml) and extract of different concentration (25, 50, 100 mg/ml). The time taken to paralysis was noted when the worms did not revive even in the normal saline solution. Death was concluded when the worms lost their motility followed by fading away of their body colour. The result of the anthelmintic activity of leaf and bark extract of *Neolamarckia cadamba* (Roxb.) Bosser as well as reference drug are presented in table-20-23.

**ANTHELMINTIC ACTIVITY**

The result of the anthelmintic activity of leaf and bark extract of *Neolam arckia cadamba* (Roxb.) Bosser as well as reference drug are presented in table 1 to 6.

**Table 1. Anthelmintic activity of various extract of *Neolamarckia cadamba* (roxb.) Bosser against Earthworms-eudrillus Eugeniae**

Drug	Time taken for Paralysis (In min)* ± SEM	Time taken for death (In min)* ± SEM
<b>Albendazole</b>		
25 mg/ml	20.52 ±0.42	35.00±0.58
50 mg/ml	15.83±0.87	28.23±0.49
100 mg/ml	12.00±0.58	23.17±0.95
<b>Alcoholic Leaf Extract</b>		
25mg/ml	23.00 ± 0.58	41.00 ± 0.36
50mg /ml	19.00 ± 0.36	34.83 ± 0.30
100mg /ml	18.00 ± 0.36	29.16 ± 0.48
<b>Alcoholic Bark Extract</b>		
25mg /ml	26.00 ± 0.26	44.67 ± 0.76
50 mg/ml	22.00 ± 0.58	38.67 ± 0.76
100mg/ml	21.67 ± 0.23	33.00 ± 0.36
<b>Aqueous Leaf Extract</b>		
25mg/ml	29.00 ± 0.58	51.33 ± 0.73
50mg/ml	26.33 ± 0.42	41.83 0.67
100mg/ml	22.16 ± 0.31	37.17 ± 0.40
<b>Aqueous Bark Extract</b>		
25mg/ml	31.00 ± 0.36	49.83 ± 0.6
50mg/ml	28.00 ± 0.58	42.83 ± 0.48
100mg/ml	25.17 ± 0.27	35.83 ± 0.48

\* Six observation SEM-Standard Error Mean

**Table 2. Anthelmintic activity of various extract of *Neolamarckia cadamba* (roxb.) Bosser against earthworm- Eicenia fertida**

Drug	Time taken for paralysis ( in min)* ±SEM	Time taken for death (in min)* ± SEM
<b>Albendazole</b>		
25mg/ml	11.67 ± 0.44	18.66 ± 0.55
50mg/ml	10.50 ± 0.53	16.00 ± 0.36
100mg/ml	7.50 ± 0.53	12.17 ± 0.27
<b>Alcoholic Leaf Extract</b>		
25mg/ml	16.00 ± 0.36	23.00 ± 0.26
50mg /ml	12.00 ± 0.36	17.83 ± 0.31
100mg /ml	8.67 ± 0.56	15.00 ± 0.58
<b>Alcoholic Bark Extract</b>		

25mg /ml	17.83 ± 0.48	27.00 ± 0.58
50 mg/ml	14.83 ± 0.48	20.00 ± 0.58
100mg/ml	12.67 ± 0.33	16.50 ± 0.76
<b>Aqueous Leaf Extract</b>		
25mg/ml	21.17 ± 0.50	28.17 ± 0.31
50mg/ml	19.00 ± 0.58	21.67 ± 0.42
100mg/ml	14.66 ± 0.58	17.00 ± 0.52
<b>Aqueous Bark Extract</b>		
25mg/ml	21.83 ± 0.48	28.17 ± 0.60
50mg/ml	17.83 ± 0.48	21.67 ± 0.59
100mg/ml	15.00 ± 0.45	17.17 ± 0.54

\* Six observation SEM-Standard Error Mean

**Table 3. Anthelmintic activity of various extract of *Neolamarckia cadamba* (roxb.) Bosser against roundworm-ascaris lumbricoids**

<b>Drug</b>	<b>Time taken for paralysis ( in min)* ±SEM</b>	<b>Time taken for death (in min)* ±SEM</b>
<b>Albendazole</b>		
25mg/ml	38.83 ± 0.31	89.00 ± 0.58
50mg/ml	21.83 ± 1.07	62.83 ± 0.30
100mg/ml	16.83 ± 0.48	51.83 ± 0.48
<b>Alcoholic Leaf Extract</b>		
25mg/ml	42.00 ± 0.36	97.50 ± 0.53
50mg /ml	31.33 ± 0.42	71.67 ± 0.67
100mg /ml	22.17 ± 0.52	63.67 ± 0.33
<b>Alcoholic Bark Extract</b>		
25mg /ml	46.33 ± 0.42	109.00 ± 0.58
50 mg/ml	37.50 ± 0.76	87.67 ± 0.33
100mg/ml	32.16 ± 0.16	74.83 ± 0.50
<b>Aqueous Leaf Extract</b>		
25mg/ml	53.17 ± 0.60	111.83 ± 0.58
50mg/ml	38.67 ± 0.67	80.00 ± 0.58
100mg/ml	33.33 ± 0.67	76.00 ± 0.58
<b>Aqueous Bark Extract</b>		
25mg/ml	57.17 ± 0.83	115.33 ± 0.80
50mg/ml	41.67 ± 0.33	85.50 ± 0.56
100mg/ml	38.17 ± 0.31	79.83 ± 0.76

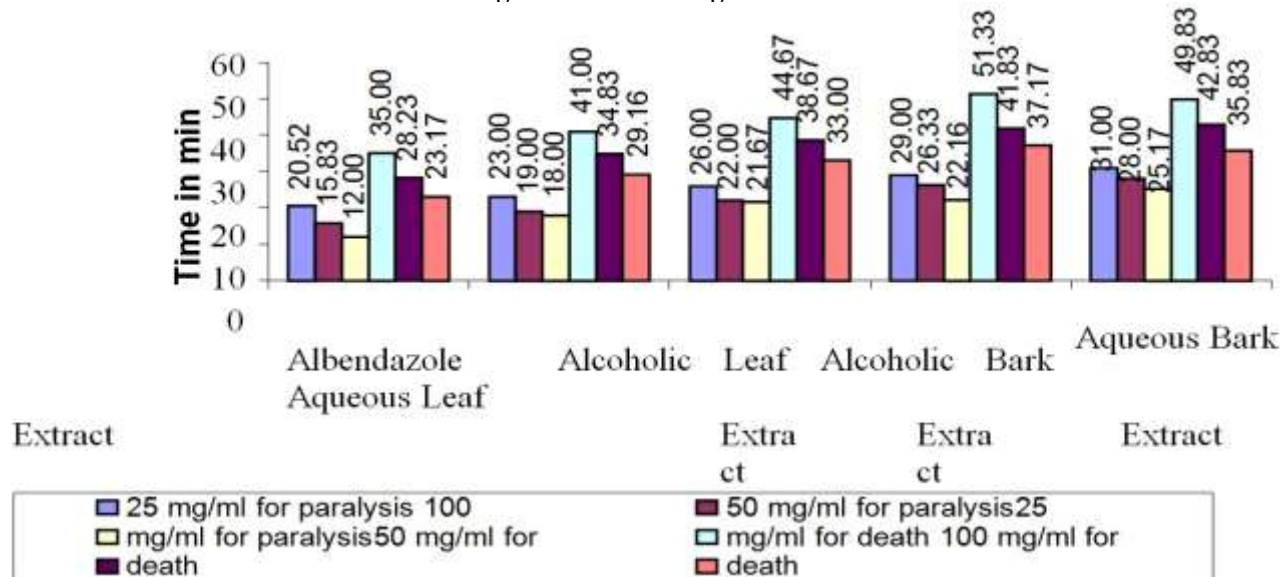
\*Six observation SEM-Standard Error Mean

**Table 4. Anthelmintic activity of various extract of *Neolamarckia cadamba* (roxb.) Bosser against tapeworms- taenia solium**

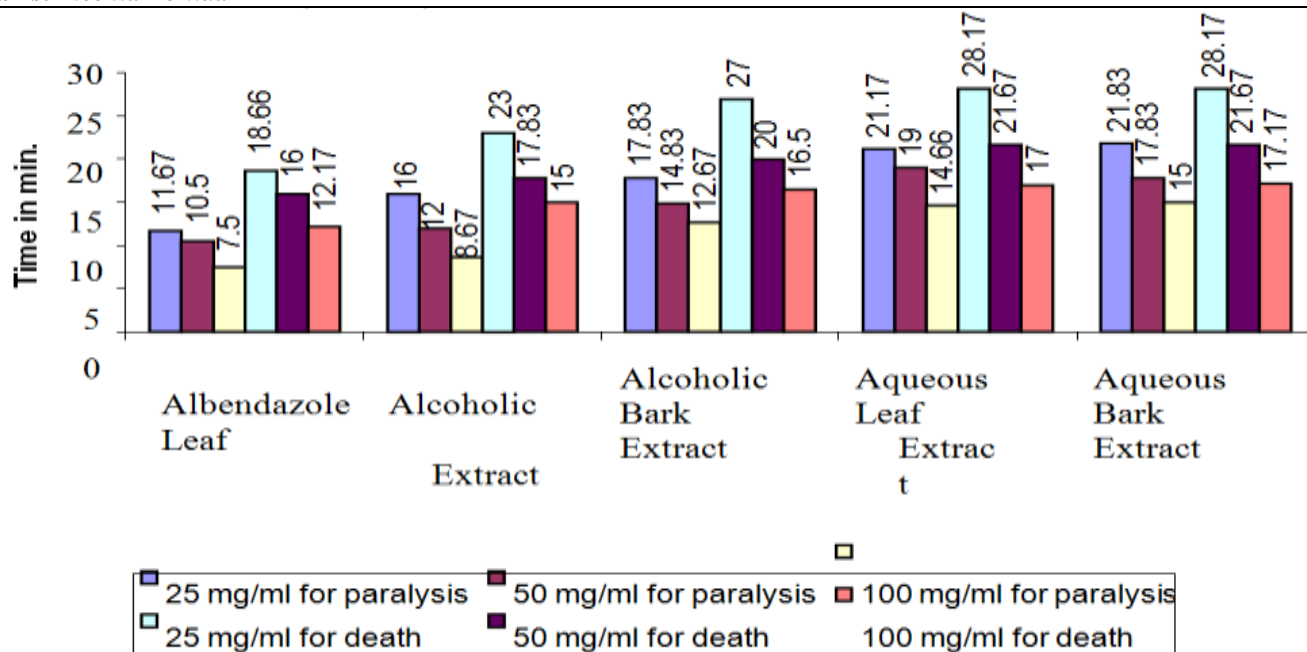
<b>Drug</b>	<b>Time taken for paralysis ( in min)* ± SEM</b>	<b>Time taken for death (in min)* ± SEM</b>
<b>Albendazole</b>		
25mg/ml	69.00 ± 0.37	202.83 ± 0.31
50mg/ml	56.00 ± 0.37	179.00 ± 0.37
100mg/ml	46.83 ± 0.48	157.83 ± 0.48
<b>Alcoholic Leaf Extract</b>		
25mg/ml	74.00 ± 0.58	214.00 ± 0.58
50mg /ml	62.00 ± 0.26	197.17 ± 0.48
100mg /ml	56.83 ± 0.48	169.50 ± 0.76
<b>Alcoholic Bark Extract</b>		
25mg /ml	82.67 ± 0.42	235.83 ± 0.58
50 mg/ml	68.83 ± 0.48	207.83 ± 0.65

100mg/ml	61.00 ± 0.58	189.00 ± 0.58
<b>Aqueous Leaf Extract</b>		
25mg/ml	85.50 ± 0.53	222.00 ± 0.63
50mg/ml	72.83 ± 1.06	203.00 ± 0.58
100mg/ml	66.50 ± 0.53	174.83 ± 0.83
<b>Aqueous Bark Extract</b>		
25mg/ml	87.67 ± 0.88	241.17 ± 0.48
50mg/ml	77.50 ± 0.85	214.17 ± 0.48
100mg/ml	70.00 ± 0.58	204.50 ± 0.62

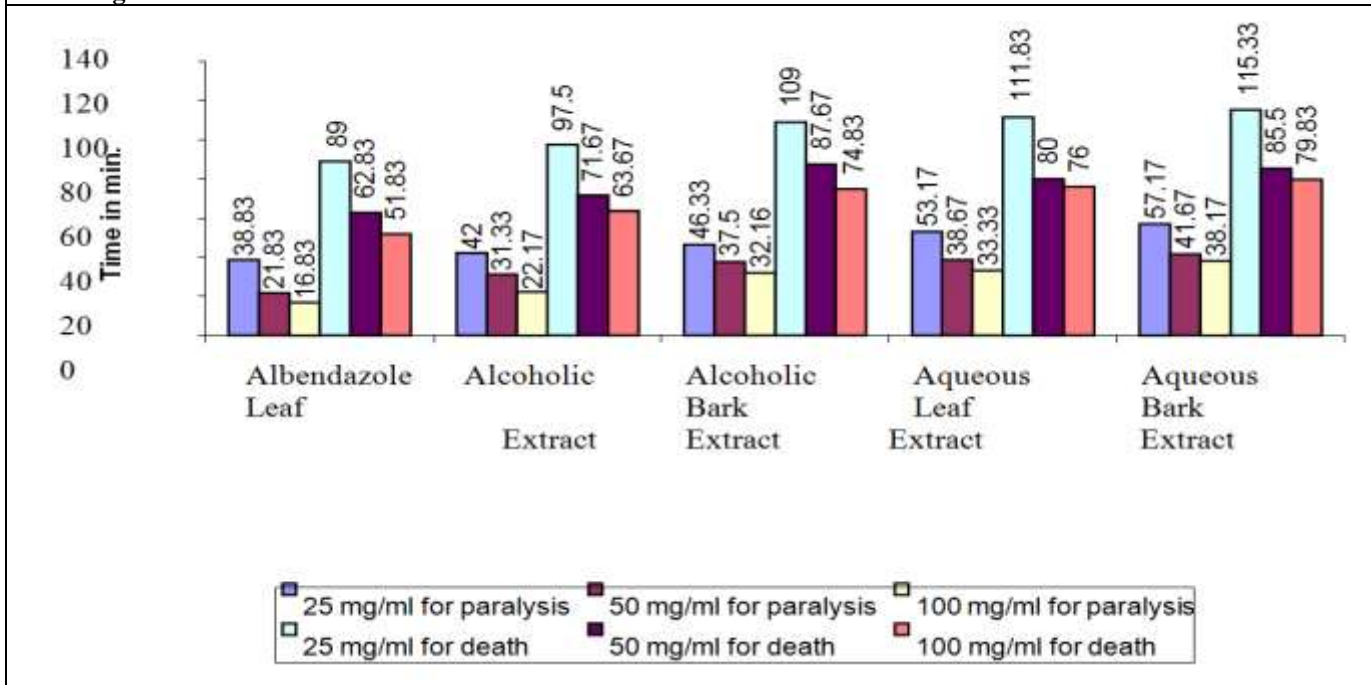
**Fig. 1. Graphical representation of anthelmintic activity of all the extract of *Neolamarckia cadamba* (roxb.) bosser against *Eudrillus eugeniae***



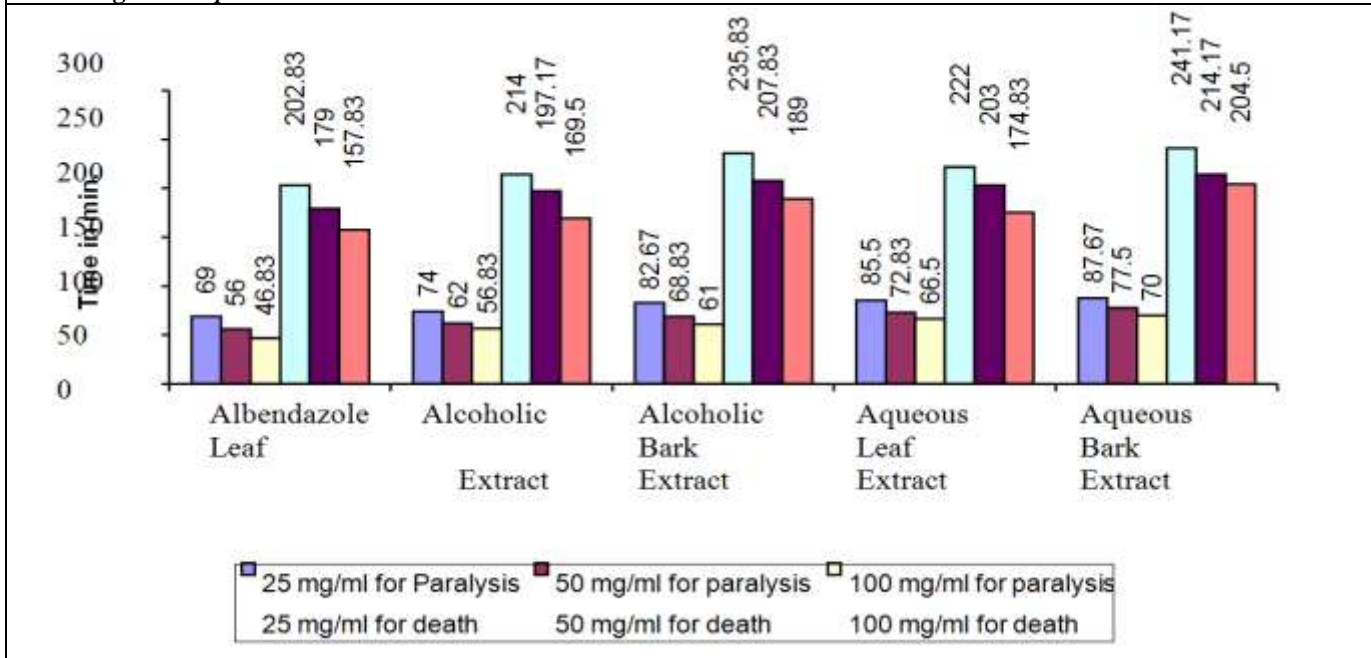
**Fig. 2. Graphical representation of anthelmintic activity of all the extract of *Neolamarckia cadamba* (roxb.) Bosser against *Eicenia Fertida***



**Fig. 3. Graphical Representation Of Anthelmintic Activity Of All The Extract Of *Neolamarckia cadamba* (ROXB.) bosser against roundworm- *Ascaris Lumbricoids***



**Fig. 4. Graphical Representation Of Anthelmintic Activity Of All The Extract Of *Neolamarckia cadamba* (ROXB.) bosser against Tapeworm- *Taenia Solium***



**SUMMARY**

The leaf and bark of *Neolamarckia cadamba* (Roxb.) Bossers belonging to family Rubiaceae have been investigated in a systematic way covering preliminary phytochemistry, anthelmintic aspects in an attempt to rationalize its use as drug of therapeutic importance. The anthelmintic activity of leaf and bark extracts of the

*Neolamarckia cadamba* (Roxb.) Bosser were carried out on different types of worms like earthworms, roundworms and tapeworms [3].

Different concentration of all the extracts of leaf and bark were studied, the time taken for paralysis and death for different types of worms. Leaf extracts showed the more activity than the bark extracts [4]. Leaf alcoholic

shows the more activity than the aqueous extracts against all the type of worms. All the extracts of leaf and bark extracts shows the comparable activity with the reference drug Albendazole. The data suggests that the extracts containing compounds may be effectively utilized as a wide spectrum anti anthelmintic agent. Further analysis including additional purification of extracts and chemical characterization of isolated compounds, along with further anti anthelmintic testing should be required for identification of compounds possessing specific activity [5].

## CONCLUSION

The leaf and bark of *Neolamarckia cadamba* (Roxb.) Bosser belonging to family Rubiaceae were taken for my studies to compare and give a report on preliminary phytochemical anthelmintic, studies made on it.

The pharmacological studies of the different extracts showed that all the extracts possessed anti-anthelmintic activity to varying extent. It shows that alkaloids and saponin present in these extracts may be possibly responsible for the pharmacological action. The antimicrobial studies of the different extracts of the leaf and bark of *Neolamarckia cadamba* (Roxb.) Bosser also showed significant anthelmintic activity.

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