

## **Anthelmintic Activity of *Anogeissus Latifolia* (Roxb) Gum exudates**

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### **Summary**

The gum exudates of *Anogeissus latifolia* investigated for anthelmintic activity against Indian earth worm *pheretima posthuma*, three concentrations [15,25,50mg/ml] were studied in activity, which involved the determination of time of paralysis and time of death of the worms. The extract exhibited significant anthelmintic activity at higher concentration of 50mg/ml. it was compared with, the crude gum of *Anogeissus latifolia* Albendazole [20mg/ml] a standard reference and distilled water control for the first time.

**Key Words:** *Anogeissus latifolia*, Steroids, Albendazole, *pheretima Posthuma*.

### **Introduction**

Anthelmintics are the drugs used to eradicate or reduce the number of helminths parasites from intestinal tract or tissues of humans and other animals, a large proportion of mankind particularly those in tropical and subtropical regions harbors worms there are two types of worm infections those in which the worms live in the host's body, the principle worms which live in host's alimentary canal are Tape worms like *taenia saginata*, *taenia sodium*, nematodes like round, thread, hook, whipworms and guinea worms. Anthelmintics are used to expel worms from the bowels, when drugs kill the worms they are called vermicides and when they temporarily incapacitate them, they are called vermifuges, the worms are removed by purgation. An ideal anthelmintic should reach the site of infestation, it preferably should not get absorbed and if absorbed. It should not produce any toxic effect on the host, it should be safe even for children [1]

*Anogeissus latifolia* belongs to family Combretaceae vernacular name of this plant are Dhava in Hindi, dindugu in Kannada, axle wood in English, dahwa in Sanskrit. The plant has been used for various diseases, roots are astringent, thermogenic and stomachic, bark is anti-inflammatory, urinary astringent, constipating. It is also used in ulcers, diabetes, diarrhea, the leaf is good for otopyorrhoea and fruits are useful in kapha pitta and leprosy[2-3].

It is an erect tree about 18-21cm, smooth bark, white color, leaves cariceous, flowers small, greenish yellow, fruits beaked, winged[4]. Its chemical constituent's roots contain flavonoid, bark contains acids, tannins, glycosides, alanine and phenylalanine. Bark wood and wood extractives contain flavonoids, tannins sap wood ellagicacid , heart wood quercetin, myricetin, dried leaves contain tannin, acids and sugar[5]. Earlier reports on the plant says it produces Antiulcer, Antimicrobial activity and heal potential in dermal wounds [6]. Anthelminitics from the natural sources may play a key role in the treatment of these parasitic infections [7]. In spite of its traditional use, there are no reports on scientific study of anthelminitic activity of *Anogeissus latifolia*. In the presence study, we investigate the anthelminitic activity of crude gum exudates of *A. latifolia*.

### Material and Methods

#### Plant Material

The fresh gum exudates of *Anogeissus latifolia* was collected in the month of august-September from the forest region of Shimoga, Karnataka state, India and authenticated by Botany Department , Sahyadri Science College, Shimoga. A voucher specimen was [NCP/PG/PCOL/45/2009] submitted at Institute's herbarium Department for further reference.

#### Preparation of extract:

The collected gum was cleaned and shed dried and made into coarse powdered with mortar and pestle. The powdered gum was diluted in the distilled water and primary phytochemical tested and remaining kept under refrigeration for further study.

#### Anthelminitic Activity:

The anthelminitic activity was performed on adult Indian earthworm, pheretima posthuma due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings [8-10], because of easy availability earthworms which have been widely used for the anthelminitic study.

Indian adult earthworms collected from moist soil and washed with normal saline to remove all faecal matter was used for the anthelminitic study, the earth worms 4-6cm in length and 1-2cm in width were used for all the experimental protocol, five groups of six earthworms were released in 50 ml of desire formulation [11-12]. First group was treated with Albendazole [20 mg/ml] and second group was treated with extract [15, 25 and 50mg/ml] in distilled water. Albendazole [Pfizer, Mumbai] was used as reference standard while distilled water as control. Observations were made for time taken to paralysis and death of individual worms up to 3 hrs. 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 colors [13].

**Table 1:** Anthelmintic activity of *Anogeissus latifolia*

Treatment	Concentrations mg/ml	Time taken for paralysis [min]	Time taken for Death[min]
Vehicle	-----	-----	-----
Albendazole	20	31.10 ± 25	60.8 ± 65
Gum exudate	15	110.6 ± 92	----
Gum exudate	25	51.5 ± 57	----
Gum exudate	50	24.62 ± 09	65.1 ± 80

Results expressed as  $\pm$ SEM of six worms in each group.

### Results

Preliminary phytochemical study of gum revealed that the presence of alkaloid, steroids and saponins and the results are shown in Table No.1, the predominate effect of Albendazole on the worms was to cause a flaccid paralysis that result in expulsion of worm by peristalsis. The lethal effect of Albendazole was attributed to its inhibition of tubulin polymerization and blocking glucose uptake [14].The gum extract at the concentration 50mg/ml showed both paralysis and death at 24.62 and 65.1 min respectively, the effect increased with concentration and 25mg/ml showed only paralysis.

### Discussion

It was observed that gum extract is significant when compared to reference control. Due to its similarity in action with Albendazole. Moreover, the activity may be attributed to the phyto-constituents present in the plant, jointly or separately. A suitable model for screening of anthelmintic drug was advocated earlier [15-16].

### Conclusion

From the above result it has been concluded that 50mg/ml conc. of gum extract was shown significant and 25mg/ml shown moderate effect. Further studies are needed to establish the mechanism of action and isolation of phytoconstituents responsible for the concerned activity.

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