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Phytochemical Vetting and Costing of Ethanolic & Aqueous Extract of Flowering Stem of *Musa acuminata* for Anthelmintic Activity

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Lohit Kanta, Rosan Patel, Ashish Senapati, Sanat Kumar Sahu, *Chaitanya Prasad Meher

Department of Phytochemistry,
The Pharmaceutical College (T.P.C), Tingipali, Barpali, Odisha, India, 768029

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ABSTRACT

The fact-based in this presented research is to explore the unsolicited flowering stem of the plant *Musa acuminata* which is usually thrown out after picking the fruit. The objective of this project is too detached out the active medicinal constituent using a least & most polar solvent (ethanol & water) and to inspect for anthelmintic activity. It was found that aqueous & ethanolic extract possessed a wide range of phytoconstituent known through its screening. Aqueous extract as compare to ethanolic extract showed more significant anthelmintic activity but can be comparable to the standard drug albendazole. Aqueous extract with a concentration of 15 mg/ml had a paralysis time of 12 min, 26 sec ± 32 and death time of 18 min, 42 sec ± 09 whereas that of ethanolic extract was 30 min, 11 sec ± 32 and death time of 35 min, 24 sec ± 51. It showing its effectiveness toward wormicidal activity.

INTRODUCTION

Herbal medicines, as compared to synthetic pharmaceuticals have greater advantages in term of safety, economy, disease curable capacity. If we go back to the history as well as in the present scenario most of the people basically from rural areas believing on the herbal medicine for treatment of all diseases. Odisha is extensive tree-covered state of India, rich in millions of medicinal plants. A common perennial, *Musa acuminata* found extensively in Odisha. Literature survey demonstrated that extract of *Musa acuminata* with different solvent possessed the number of pharmacological activity.

Figure-1: Banana Plant

Figure-2: Banana bunch stem

Objective

To explore the medicinal activity of the unwanted, flowering stem of *Musa acuminata* which is usually thrown out by the people after consuming the fruit.

MATERIALS AND METHODS

Preparation of extract

The flowering stem of *Musa acuminata* was collected from the local market of Barpali and it was authenticated by the Dept. of Botany, MSCST, Barpali. It was washed, air dried under shade at room temperature. It was converted to coarse powder then extraction was carried out using soxhlet apparatus for 8 hrs at 50°C using two different solvent ethanol & water. The semisolid residue obtained from both the solvent was collected.

Evaluation of Anthelmintic activity: Albendazole was taken as a standard drug, it was diluted with normal saline to obtain 15, 30 and 50 mg/ml concentrations. Aqueous and Ethanolic extracts of the flowering stem of *Musa acuminata* were diluted with normal saline to obtain 15, 30 and 50 mg/ml concentrations. Normal saline (0.9% NaCl) alone served as the negative control. All the concentration were kept on the Petri-plates with proper marking. Indian earthworm of nearly equivalent size was selected & each Petri-plates are filled with six number of earthworm at normal room temperature. Time for paralysis & time of death for worms was recorded[1,2].

RESULTS AND DISCUSSION

Aqueous and Ethanolic extracts of the flowering stem of *Musa acuminata* was screened through several Phytochemical tests. The results are as follows (Table-1).

Table 1. Qualitative Phytochemical Screening-, Absent; +, Present

Sr. No.	Phytochemical test	Ethanol	Water
1. Test for alkaloid			
i)	Mayer's test	+	-
ii)	Wagner's test	+	-
iii)	Hager's test	+	-
iv)	Dragendorff's test	+	-
2. Test for carbohydrate & glycoside			
i)	Molish's test	+	
ii)	Fehling's test	+	+
iii)	Barfoed's test	+	
iv)	Benedict's test	+	+
v)	Borntrager's test	-	-
3. **Test for saponin**			
i)	Foam test	-	+
4. Test for protein & amino acids			
i)	Millon's test	+	+
ii)	Biuret's test	+	+
iii)	Ninhydrin test	+	+
5. Phenolic compounds & flavonoids			
i)	Ferric chloride test	+	+
ii)	Lead acetate test	-	-
iii)	Alkaline test	-	-
6. Test forPhytosterol			
i)	Solkowski test	+	+

Both aqueous and ethanolic extract found to possess various phytoconstituent. Standard drug Albendazole at concentration of 15 mg/ml, 30 mg/ml, 50 mg/ml have a paralysis time of 16 min, 16 sec ± 15, 14 min, 20 sec ± 11, 11 min, 55 sec ± 15 respectively and death time of 20 min, 12 sec ± 52, 17 min, 12 sec ± 33, 16 min, 21 sec ± 42. It was found that both the extract have wormicidal activity. When we increase the concentration the wormicidal activity also increased accordingly. Aqueous extract with a concentration of 15 mg/ml have a paralysis time of 12 min, 26 sec ± 32 whereas that of ethanolic extract was 30 min, 11 sec ±

32. So it confirms that aqueous extract has better activity than ethanolic extract. But both can be comparable to the standard drug Albendazole.

Table 2. *In vitro* anthelmintic effect of the flowering stem of *Musa acuminata against* Pheritima Posthuma.

Treatment	Concentration	Paralysis time (Min)	Death time (Min)
Albendazole (Std)	15 mg/ml 30 mg/ml 50 mg/ml	16 min, 16 sec ± 15 14 min, 20 sec ± 11 11 min, 55 sec ± 15	20 min, 12 sec ± 52 17 min, 12 sec ± 33 16 min, 21 sec ± 42
Aqueous Extract	15 mg/ml 30 mg/ml 50 mg/ml	12 min, 26 sec ± 32 12 min, 45 sec ± 56 10 min, 28 sec ± 45	18 min, 42 sec ± 09 15 min, 20 sec ± 41 15 min, 31 sec ± 58
Ethanolic Extract	15 mg/ml 30 mg/ml 50 mg/ml	30 min, 11 sec ± 32 26 min, 40 sec ± 16 25 min, 24 sec ± 10	35 min, 24 sec ± 51 33 min, 29 sec ± 15 32 min, 37 sec ± 39
Control	-	-	-

Statistical Analysis

Worm counts were expressed as mean ± SEM. The significance of the difference between the means was determined by Student's t-test and considered as significant when P <0. 0 5.

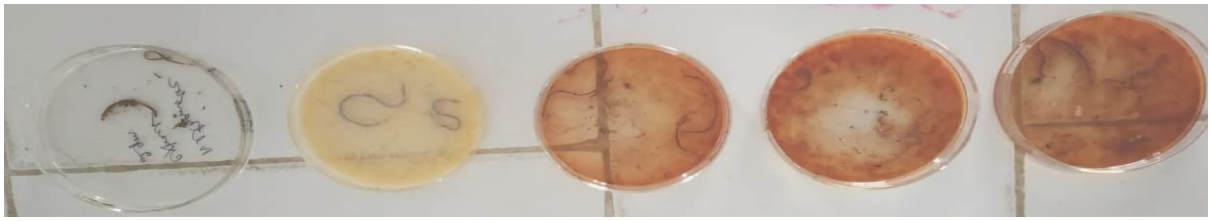

Fig-3. Evaluation with ethanolic extract

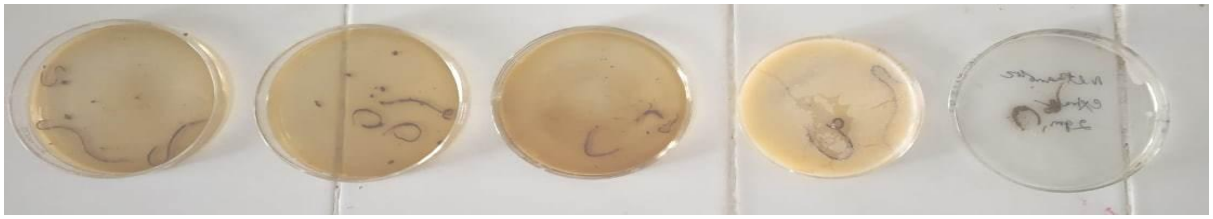

Fig-4. Evaluation with aqueous extract

CONCLUSION

From the above observation tables, it was clear that ethanolic extract has a better wormcidal effect than aqueous extract. This research work definitely provided the clue regarding the effectiveness of flowering stem of *Musa acuminat*e. Hence it is needed to be further study to investigate & isolate the constituent which is responsible for the same and can be used in future for parasitic infection in human.

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