ANTHELMINTIC ACTIVITY OF LEAVES OF JUSTICIA BEDDOMEI

U. SRINIVASA¹, J. VENKATESHWARA RAO², A.M. KRUPANIDHI¹, AND S. SHANMUKHAPPA¹

¹Bapuji Pharmacy College, S.S.Lay out, Davangere, 577004
²Talla Padmavathi College of Pharmacy, Warangal-506012,

Received: 2.12.2006   Accepted: 25.12.2006

ABSTRACT:

Ethanolic and Chloroform extract of leaves of Justicia beddomei were evaluated separately for anthelmintic activity on adult Indian earthworms Pheretima posthuma, using Piperazine citrate as reference standard. The results indicated that ethanolic extract was more potent than the chloroform extract.

INTRODUCTION

Justicia beddomei is a shrub, belongs to family Acanthaceae, grows well in shadow and moist areas. The plant is widely distributed in Kerala and in hill areas in India. It is a large glabrous shrub; leaves are opposite, short petioled up to 15 cm long, 3.75 cm broad, main nerves about 8 pairs, flower heads short, dense or condensed spikes; fruit capsules with a long solid base. The whole plant is used for medicinal purposes. The plant is bitter, astringent, refrigerant, expectorant, diuretic, antispasmodic, febrifuge, depurative, styptic, and tonic. Leaves are good for irritable cough and for bleeding in diarrhea and especially in haemoptysis. Flowers are used in ophthalmia. The roots along with the leaf juice are used in phthisis, cough, haemoptysis and asthma. The preliminary phytochemical examination of Justicia beddomei leaves showed the presence of alkaloids, tannins and disaccharides. However, no systematic study on phytochemical and anthelmintic activity of the plant has been reported in the literature. In this context, the present study is focused to evaluate the anthelmintic activity of leaves of Justicia beddomei.

MATERIAL AND METHODS

The leaves of Justicia beddomei were collected from the Katapadi, Onel herbal nursery, Udupi district, Karnataka, in winter season and dried under shade. The Taxonomist
Dr. P. M. Shivakumar, Dept of Botany, DRM Science College, Kuvempu University Karnataka identified the plant. A voucher specimen US. 001 is preserved in our research laboratory for future reference.

**Preparation of the Extract**

The collected leaves were shade dried, coarsely powdered and the powder was exhaustively extracted with chloroform and ethanol (95%) using Soxhlet apparatus. The solvent was then removed under reduced pressure using rotary flash evaporator. It was further concentrated and dried in the desiccator for further studies. The dried extracts were suspended in 1% Tween 80 in normal saline (vehicle) and used for anthelmintic activities.

**Anthelmintic activity**

The anthelmintic activity was evaluated on adult Indian earthworms (*Pheretima posthuma* obtained from Horticulture Department, Davanagere). The method of Mathew et al. and Dash et al. was followed for anthelmintic screening. Nine groups; each consisting of six earthworms of approximately equal size (8±1 cm) were released in to 50 ml of desired formulation at room temperature.

Each group was treated with one of the following: vehicle (1% Tween 80 in normal saline), Piperazine citrate (15 mg/ml) and extracts (10, 20 and 50 mg/ml) in normal saline containing 1% Tween 80. Observations were made for the time taken to paralyze and/or death of individual worms up to four hours of test period. The mean paralysis time and mean lethal time for each extract was recorded. Paralysis was said to occur when the worms did not revive even in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body colour. (Table-1)

**RESULTS AND DISCUSSION**

Indigenous drug systems can be a source of variety of new drugs, which can be used to eliminate worms, but their claimed reputation has to be verified on scientific basis. The results in the (Table-I) depict the time taken for paralysis and death of worms after treating with test extracts. It was observed that the etanolic extract of *Justicia beddomei* leaf is more potent than the chloroform extract and their activity was comparable with the standard drug Piperazine citrate. The test extracts cause paralysis followed by death of the worms at all tested dose levels. Potency of the extracts was inversely proportional to the time taken for paralysis/death of the worms.

**CONCLUSION**

It is quite apparent from the study that the ethanolic extract possesses significant anthelmintic activity. It would be interesting to isolate the constituents responsible for the anthelmintic activity.
**Table - I**

*Anthelmintic Activity of Leaves of Justicia beddomei*

| Treatment                  | Time taken for Paralysis (Minutes) | Time taken for Death (Minutes) |
|----------------------------|-----------------------------------|-------------------------------|
| **Vehicle**                | ----                              | ----                           |
| Piperazine Citrate         | 16.7 ± 0.8                        | ----                           |
| **Ethanolic Extract**      |                                   |                               |
| 10 mg/ml                   | 115.0 ± 1.8                       | 140.0 ± 2.6                    |
| 20 mg/ml                   | 84.2 ± 3.7                        | 110.0 ± 3.7                    |
| 50 mg/ml                   | 39.2 ± 2.4                        | 55.0 ± 2.6                     |
| **Chloroform Extract**     |                                   |                               |
| 10 mg/ml                   | 156.7 ± 9.9                       | 177.0 ± 8.1                    |
| 20 mg/ml                   | 126.7 ± 4.9                       | 145.0 ± 4.3                    |
| 50 mg/ml                   | 70.8 ± 3.3                        | 88.3 ± 4.0                     |

**REFERENCES**

**Journals**

1. Dash, G.K, Mishra, B, panda, A, Patro, C.P and Ganapaty, S, *Indian. J.Nat.prod*, XIX, 2,24, (2003).
2. Dash, G.K, Suresh, P, Sahu S.K, Kar, D.M, Ganapaty, S and Panda, S.B, *J.natural Remedies*, II, 2,182, (2002).
3. Srinivas, G.M, Shiva Kumar, Rao, S.D and Jayachandran, E, *Indian Drugs*, XXXXIII, 4,343, (2006).
4. Gosh, Maity, T.K, Bose, A and Dash, G.K, *Indian.J.Nat.Prod*, XXI, 2,16, (2005).

**Books**

5. Warrier, P.K, Nambiar, V.P.K and Ramankutly, C.,” Indian Medicinal Plants” Vol, 3 Orient Longman Pvt. Ltd; Chennai, 268, (1994).
6. Asolkar, LV, Kakkar, K.K and Chakre, O.J, “Second supplement to Glossary of Indian Medicinal Plants with Active Principles”, part-1. National Institute of Science Communication (CSIR), New Delhi, 23, (2000).
7. Harbone, J.B,” Phytochemical Methods”, 3rd Edn, Chapman and Hall, London, 91, (1988).
8. Vinod.D.Rangari, “Pharmacognosy and Phytochemistry”, Part-1, 1stEdn, Career Publications, Nasik, 132, (2002).