



Received on 29 May, 2010; received in revised form 07 September, 2010; accepted 11 October, 2010

## ANTHELMINTIC ACTIVITY OF ETHANOLIC EXTRACT OF BARK OF *MYRICA ESCULENTA*

Vibhor K. Jain\* and Bindu Jain

School of Pharmacy, Chouksey Engineering College, Bilaspur (C.G.), India

### ABSTRACT

*Myrica esculenta* (Myricaceae), commonly known as 'Katphala', is an evergreen, sun-temperate tree. Phytochemical constituents reported in the bark are tannins mainly epigallocatechin-3-o-gallate, gallic acid, myricanone, myricanol and a yellow dye. The edible portion of the fruit is its pulp which contains reducing sugars, tannins and vit C. *Myrica esculenta* (*M. esculenta*) is known traditionally in Ayurveda to possess various medicinal activities. In the present study antihelmintic activity of aqueous ethanolic extract of the bark of *myrica esculenta* was evaluated on adult Indian earthworm *Pheritima posthuma*, which resembles anatomically and physiologically with the intestinal round worm parasite of human being using piperazine citrate as reference standard. The extract was prepared using soxhlet apparatus and concentrated. This extract was used for the evaluation of antihelmintic activity, which caused the death of the worms at the tested dose level and it was found to be more potent than the reference control piperazine citrate. Aqueous ethanolic extract at the concentration of 12.5 mg/ml showed both paralysis and death in 20.11 & 41.25 min respectively. The effect increases with the concentration and the time taken for paralysis and eventually death is found to be inversely proportional to the dose.

#### Keywords:

*Myrica esculenta*,  
Antihelmintic activity,  
Aqueous ethanolic extract,  
Earthworm

#### Correspondence to Author:

Vibhor Kumar Jain

C/O Vinay-Kamal villa, Behind MIG-71, Nehru Nagar, Bilaspur (C.G.), India

**INTRODUCTION:** *Myrica esculenta* (Myricaceae), commonly known as 'Katphala' is an evergreen, sun-temperate tree growing to 12 m height. The bark of *myrica esculenta* is said to possess many medicinal properties. It is stimulating, useful in catarrhal fever, cough, throat infection, asthma, urinary discharges, bronchitis, anemia, cholera, ulcers and is used in many other diseases. The fruits are used to heal ulcer<sup>1</sup>. Phytochemical constituents reported in the bark are tannins mainly epigallocatechin-3-o-gallate, gallic acid, myricanone, myricanol and a yellow dye<sup>2,3</sup>. The edible portion of the fruit is its pulp which contains reducing sugars, tannins and vit. C<sup>4</sup>. The present work deals with the assessment of the antihelmintic properties of *M. esculenta*.

#### MATERIALS AND METHODS:

**Plant material:** The bark collected from the local market Lucknow (U.P.) and authenticated at botany department of Lucknow University, Lucknow (U.P.). The fruits and bark of the plant were washed and shade dried and then grinded to coarse powder by a mechanical grinder.

**Preparation of extract:** The powdered bark extracted with 50% aqueous ethanol by Soxhlet apparatus. The solvents were evaporated under vacuum and a grayish semi-solid mass obtained was kept under refrigeration for further use.

**Antihelmintic activity:** The antihelmintic activity was evaluated on adult Indian earthworm *Pheritima posthuma*. It resembles anatomically

and physiologically with the intestinal round worm parasite of human being<sup>5-7</sup>. The method of Mathew *et al.*,<sup>8</sup> and Dash *et al.*,<sup>9,10</sup> was followed for the screening. Five groups of approximately equal size Indian earthworms consisting of six earthworms in each group were released in 50 ml of desired formulation. Each group was treated with one of the following: Vehicle (1% gum acacia in normal saline). Piperazine (15 mg/ml) and extract (50 mg/ml, 25mg/ml, 12.5mg/ml) in normal saline containing 1% gum acacia. Observations were made for the paralysis time (PT) and subsequently for death time (DT). Paralysis was said to occur when the worms did not revive even in normal saline. The worms were said to be dead when they lost their motility followed by fading away of their body colors.

**RESULTS AND DISCUSSION:** The perusal of the data reveals that the aqueous ethanolic extract at the conc. of 12.5 mg/ml showed both paralysis and death in 20.11 & 41.25 min respectively. The effect increases with the concentration. It was observed that aqueous ethanolic extract of *myrica esculenta* is more potent than reference control piperazine citrate. The extract caused paralysis followed by the death of the worms at all tested dose levels. The potency of extract was found inversely proportional to the time taken for the paralysis of the worms. The activity confirms the dose dependent nature of extract. (Table 1)

TABLE 1: *IN-VITRO* ANTHELMINTIC ACTIVITY OF AQUEOUS ETHANOLIC EXTRACT OF MYRICA ESCULENTA

Treatment	Conc. (mg/ml)	Time taken for Paralysis (min.)	Time taken for death (min.)
Vehicle	--	--	--
Piperazine citrate	15.0	15.33±0.360	34.30±0.320
Aq. ethanolic extract	50.0	6.11± 0.345	11.75±0.311
Aq. ethanolic extract	25.0	13.35± 0.412	24.51±0.652
Aq. ethanolic extract	12.5	20.11 ± 0.49	41.25±0.735

The results show the antihelmintic properties of this plant. Further study regarding the isolation and characterization of the active principle responsible for antihelmintic activity are currently under progress.

#### REFERENCE:

1. Kirtikar K.R. and Basu B.D. , Indian Medicinal Plants, vol. III, International Book Distributors and Publishers, Dehradun, 1999, 2350
2. Rastogi R.P. and Mahrotra B.N., Compendium of Indian Medicinal Plants, Vol.4, National Institute of Science Communication, New Delhi, 1985, 491
3. Barnes J. and Anderson L.A., Herbal medicines , second edition, Pharmaceutical Press, London, 2002, 71
4. Parmar C. and Kaushal M.K., Wild Fruits, Kalyani Publishers, New Delhi, 1982, 49
5. Vidhyarthi R.D. A textbook of zoology, 14<sup>th</sup> edition, S.Chand and Co., New Delhi, 1977, 329
6. Thorn G.W., Adams R.D., Braunwaid E., Isselbacher K.J. and Petersdorf R.G., Harrison's Principle of Internal Medicines, McGraw Hill Co., New York, 1977, 1088
7. Vigar Z. Atlas of Medical Parasitology, second edition, P.G Publishing House, Singapore, 1984, 216
8. Mathew A.S., Patel K.N. and Shah B.K., Indian J. of Nat. Prod., 1995, 14(1),11
9. Dash G.K., Mishra B., Panda A., Parto C.P. and Ganapati S., Indian J. of Nat. Prod., 2003, 19(3), 24
10. Dash G.K., Suresh P., Sahu S.K., Kar D.M., Ganapati S. and Panda S.B., J. of Nat. Remed., 2002, 2(2), 182

\*\*\*\*\*