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Anthelmintic Activities of Roots of *Cocos nucifera* and Aerial Parts of *Jasminum multiflorum*

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The anthelmintic activities of different extract of roots of *Cocos nucifera* and aerial parts of *Jasminum multiflorum* were evaluated separately on adult Indian earthworm (*Pheretima posthuma*) and the activities were compared with standard drug piperazine citrate and albendazole. It was found that petroleum ether, benzene, chloroform and ethyl acetate extract of *Cocos nucifera* (PECN, BCN, CCN and EACN, respectively) and petroleum ether extract of *Jasminum multiflorum* (PEJM) exhibited dose dependant action and inhibition of spontaneous motility (paralysis) and death of earthworms. The results indicated that the PECN, BCN and CCN were more potent than EACN and PEJM.

Key Words: *Cocos nucifera, Jasminum multiflorum*, Piperazine citrate, Albendazole.

INTRODUCTION

Cocos nucifera (Nariyal in Hindi; Narikel, Dab in Bengali; Nadia, Paido in Oriya; Family : Palmae) is a tall tree, distributed throughout tropical islands, coasts, South America, Florida, Bahamas in North America, Southern India and Sri Lanka[1]. Every part of the coconut palm is used by man. Seed is cooling, tonic, laxative, cardio tonic and useful in the treatment of leprosy, tuberculosis, liver complaints, piles, *etc*. Bark is good for teeth and scables. Flower is useful in diabetes, dysentery, urinary discharges, *etc*.[2,3].

Jasminum multiflorum (Kunda in Sanskrit, kundaphul in Bengali, Chemeli in Hindi; Family: Oleaceae) is a large scandent, tomentose shrub with young branches clothed with velvety pubescence, distributed throughout India. Dried leaves of the plant are good for indolent ulcer[4]. The flowers are useful in vitiated conditious of pitta, inflammation, rheumatism and cephalalgia. The root is antidote to cobra venum[5,6]. From literature survey, it was found that no detailed study has yet been done regarding the anthelmintic properties of roots of *Cocos nucifera* and aerial parts of

Jasminum multiflorum Andr. On preliminary testing, it was found that petroleum ether, benzene, chloroform and ethyl acetate extract of *Cocos nucifera* (PECN, BCN, CCN and EACN, respectively) and petroleum ether extract of *Jasminum multiflorum* (PEJM) showed significant anthelmintic activity compared to other extracts of them. Hence, in the present study, we have evaluated the anthelmintic activities of petroleum ether, benzene, chloroform and ethyl acetate extracts of *Cocos nucifera* (PECN, BCN, CCN, EACN) and petroleum ether extracts of *Jasminum multiflorum* (PEJM) to substantiate the folklone claims.

EXPERIMENTAL

The roots of *Cocos nucifera* were collected from Jharpokharia, Orissa during the month of July and aerial parts of *Jasminum multiflorum* were obtained from various places of Midnapore district of W.B. during the month of October-November. The samples were authenticated by Dr. H.J. Chaudhury, Joint Director, Central National Herbarium, Botanical Survey of India, Howrah, W.B. The voucher specimens have been preserved in our laboratory for further references (DAS1 and DPS1).

Extraction: Shade-dried, powdered and sieved (40 mesh size) roots were extracted in succession with petroleum ether (40-60ºC), benzene, chlororform and ethyl acetate using soxhlet apparatus. Similarly, the powdered aerial parts of *Jasminum multiflorum* were extracted first with petroleum ether (40-60ºC) and then with ethanol. The extracts were evaporated to dryness. The trace amount of solvent which may be present within the solid mass of respective extracts, was removed under vacuum. The yield of PECN, BCN, CCN, EACN and PEJM were 0.33, 0.16, 0.35, 0.77 and 2.10 % w/w, respectively with respect to dry starting materials.

Evaluation of anthelmintic activities: Anthelmintic activities were evaluated for PECN, BCN, CCN, EACN and PEJM seperately. The activity was tested according to method discussed in detail by Kalesaraj and Kurup[7]. *Pheretima posthuma* (earthworm obtained from Horticulture Department) of nearly equal size (8 ± 1 cm) were selected for present study due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings[8,9].

Each group was treated with one of the followings: vehicle (3 % Tween 80 in normal saline), piperazine citrate (15 mg/mL), albendazole (10 mg/mL) and PECN, BCN, CCN (5, 10 mg/mL) and EACN, PEJM (5, 10, 25 mg/mL) in normal saline containing 3 % Tween 80. Observations were made for the time taken to paralyses and/or death of individual worm up to 4 h of test period. Paralysis was said to occur when the worms did not revive even in normal saline. Death was concluded when the worm lost their motility followed with fading away of their body colour[10].

RESULTS AND DISCUSSION

The anthelmintic activities[11,12] of the title compound on *P. posthuma* are exhibited in Table-1. The perusal of the data reveals that PECN, BCN, CCN and EACN at the dose level of 5 and 10 mg/mL showed significant anthelmintic activities compared to reference standards albendazole and piperazine citrate. However, PEJM showed the effect at 25 mg/mL concentrations that is comparable with the reference standards.

TABLE- 1
ANTHELMINTIC ACTIVITIES OF ROOTS OF *C. nucifera* AND AERIAL PARTS OF *J. multiflorum*

Compound	Concentration (mg/mL)	Time (min)	
		For paralysis	For death
Control (3 % Tween 80 in normal saline)	–	–	–
Albendazole	10	34.62 ± 0.61	63.78 ± 0.65
Piperazine citrate	15	18.57 ± 0.32	79.20 ± 1.00
PECN	5	11.30 ± 0.25	16.85 ± 0.50
	10	9.06 ± 0.45	14.10 ± 0.39
BCN	5	7.53 ± 0.44	22.69 ± 0.71
	10	5.03 ± 0.32	14.0 ± 0.30
CCN	5	6.16 ± 0.34	9.90 ± 0.40
	10	3.70 ± 0.25	7.05 ± 0.35
EACN	5	34.00 ± 0.55	56.10 ± 1.10
	10	20.20 ± 0.42	39.45 ± 0.80
PEJM	5	100.25 ± 1.40	130.55 ± 1.70
	10	75.99 ± 0.99	104.30 ± 1.39
	25	34.28 ± 0.50	63.00 ± 0.58

Results are expressed as mean ± SEM from six observations. PECN = petroleum ether extract of *C. nucifera*, BCN = benzene extract of *C. nucifera*, CCN = chloroform extract of *C. nucifera*, EACN = ethyl acetate extract of *C. nucifera*, PEJM = petroleum ether extract of *J. multiflorum*.

The present study therefore reveals that CCN, BCN and PECN are more potent than EACN and PEJM, even though all the five extracts were endowed with anthelmintic properties. The activity reveals concentration dependant nature of the different extracts. Potency of the extracts was found to be inversely proportional to the time taken for paralysis/death of the worms.

The above findings justify the anthelmintic properties of the above plants, which augment their use by the tribes of the particular areas. Further studies regarding the isolation and characterization of the active principle(s) responsible for anthelmintic activities and their mode of action are currently under progress.

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