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Research Article

COMPARATIVE STUDIES OF CENTRAL NERVOUS SYSTEM DEPRESSANT ACTIVITY ON HYDROALCOHOLIC EXTRACT OF ACALYPHA *INDICA AND CROTAN BONPLANDIANUM*

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ABSTRACT

The whole plant extract of *acalyphaindica* and *croton bonplandianum* obtained cold extraction of mixture of ethanol and water was chosen for pharmacological screening.The Swiss albino mice are subjected to extract at 125 mg/kg to check the CNS depressant activity by actophotometer test. The test and standard were given orally. After 60 min. the animal are placed in to the actophotometer and observation were recorded at the interval of 90,120 and 180 min. *acalyphaindica* showed CNS depressant effect but *crotonbonplandianum* has no depressant activity.

Keywords: *acalyphaindica* and *crotonbonplandianum*, CNS depressant,actophotometer test.

INTRODUCTION

Acalyphaindicalinn. (euphorbiaceae) is an annuals or periannual herbs, shrubs and smalltrees. These are widely distributed in all over the world it occurs in Nigeria, Africa and India.It has possibly been introduced elsewhere as a weed.

The whole plant possesses medicinal properties like antihelminthic[1], anti arthritic activity[2], antibacterial[3], antiulcer[4], antidiabetic[5], antitubercular activity[6]and post coital antiinfertility[7]. The plant contains alkaloid acalyphus, acalyphine, quinine, amides such as acalyphmide and sterols as stigmasterol and a flavanolkaempherol and cyanogenetic glycoside[8].

Croton bonplandianum (euphorbiaceae) commonly called bon tulasiditrubuted in india, Bangladesh and all over countries of south asia. It is also considered as weed. The reported activities are anti microbial[9], antitumour[10], and mitodepression[11] and antioxidant activity[12]. The phytochemical screening shows presence of alkaloids, flavanoids, glycosides and several other aromatic compounds[9].

MATERIALS AND METHODS

Plant material

The whole plant of *acalyphaindica* and *crotanbonplandianum*was collected separately from in and around places of Raghu College of Pharmacy in January 2013, authenticated (*acalyphaindica* with voucher specimen number 22081 and *crotanbonplandianum* with voucher specimen number 22080 in Botany Department Herbarium Andhra university) by prof. M. Venkaiah Msc. Phd. PGDCA professor of botany department, Andhra university, Visakhapatnam.

Preparation of the hydro alcoholic extract of the plant

The dried and ground plant material (2kg) was macerated with a mixture of solvents comprising of ethanol and water (1:1)[13] at room temperature for 7 days. Then extract was filtered and concentrated with a rotator evaporator to get the dried extract. Then, the obtained mass is stored in a well closed container in a cool and dark place.

Chemicals
Chlorpromazine, SodiumCarboxy methyl cellulose.

Requirements
Rat feeding tube of 21 gauge, distilled water, 6ml and 1 ml syringes.

Animals
20 Swiss albino mice of either sex weighing 15-35gwere used for the study. The experimental animals were housed in polypropylene cages and maintained under standard conditions (12 h light and dark cycles, at 25±3°C and 35-60% humidity).Standard pelletized feed and distilled water were provided. All the experimental procedures were approved by institutional animal ethical committee.

Preparation of Sodium CMC suspension
Suspension of sodium CMC was prepared by triturating 300mg of Sodium CMC in 30 ml of distilled water.

Acute oral toxicity study
Acute Toxicity Study was carried out for the determination of LD_{50} value of hydroalcoholic extract of *acalyphaindica* and *crotanbonplandianum*in experimental animals. The study was performed as per OECD guidelines 423. By this procedure LD_{50} of hydro alcoholic extract of *acalyphaindica* and *crotanbonplandianum* was found to be 2000mg/kg, as given in table no: 1 and 2.

Grouping and treatment
The animals received treatments as given in table no:3.

METHOD
The CNS depressant activity of the extracts is measured by Actophotometer test. Swiss albino mice weighing between 20-30g were used for evaluation of CNS depressant activity in each group six albino mice was kept. A solution of chlorpromazine was prepared in normal saline water. Suspensions of plant extracts were prepared by using Sodium CMC suspension. Swiss albino mice of either sex were divided into four different groups each containing six animals, the animals were marked individually. Food was withdrawn 12 hours prior to drug administration till completion of experiment. The animals were weighed and numbered appropriately. The test and standard drugs were given orally. After 60 minutes, the animals are placed in to the actophotometer and the observations were recorded and at the time interval of 90, 120 and 180 minutes. The result of in mice was tabulated in Table-4.

Statistical Analysis
Allthe results were expressed as mean ± SEM and subjected to one way analysis of variance followed by Dunnet's t-test for comparison between the groups.In all the cases $p<0.05$ was considered statistically significant.

RESULTSAND DISCUSSION
Group B received chlorpromazine (4 mg/kg) and it has showed significant CNS depressant activity by decrease in basal activity score at 60 min
Group C was treated with *acalyphaindica* (250 mg) and has showed significant CNS depressant activity when compared to control where as other groups ,group Dand group E were treated with *Croton bonplandianum* and *Acalyphaindica+Croton bonplandianum* have not shown significant CNS depressant activities.

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Table 1: acute toxicity studies of *crotanbonplandianum*

Table: 1 LD_{50} values of Hydro alcholic extract of *Crotanbonplandianum*				
S. No	**Group**	**No. of animals / group**	**Dose mg/kg**	**No. of deaths of animals**
1	I – V	3	5	0
2	VI – X	3	50	0
3	XI – XV	3	300	0
4	XVI - XX	3	2000	0

Table 2: acute toxicity studies of *acaliphaindica*

TABLE: 2 LD_{50} values of Hydroalcholic extract of *Acalyphaindia*				
S. No	**Group**	**No. of animals / group**	**Dose mg/kg**	**No. of deaths of animals**
1	XXI-XXV	3	5	0
2	XXVI-XXX	3	50	0
3	XXXI-XXXV	3	300	0
4	XXXVI-XL	3	2000	0

Table 3: Grouping and Treatment

S.No	GROUP	Treatment
1	GROUP A	Received 1% Sodium CMC, Served as Control
2	GROUP B	Received Standard drug Chlorpromazine at a dose 4mg/kg
3	GROUP C	Received Hydroalcoholic extract of *Croton Banplandianum*250mg/kg
4	GROUP D	Received Hydroalcoholic extract of *Acalyphaindica*250mg/kg
5	GROUP E	Received hydroalcoholic extract of *Croton bonplandianum* 125 mg/kg + *Acalyphaindica*125 mg /kg

Table 4: CNS depressant activity of *Croton bonplandianum* and *Acalyphaindica*

Time	Control	Standard	AI	CB	AI+CB
0	60.0	103.0	53.0	88.0	86.0
30	59.0	35.0	20.0	49.0	48.0
60	60.0	5.0	24.0	22.0	44.0
120	49.0	5.0	26.0	42.0	34.0
180	50.0	5.0	34.0	60.0	42.0
240	55.0	5.0	38.0	77.0	66.0

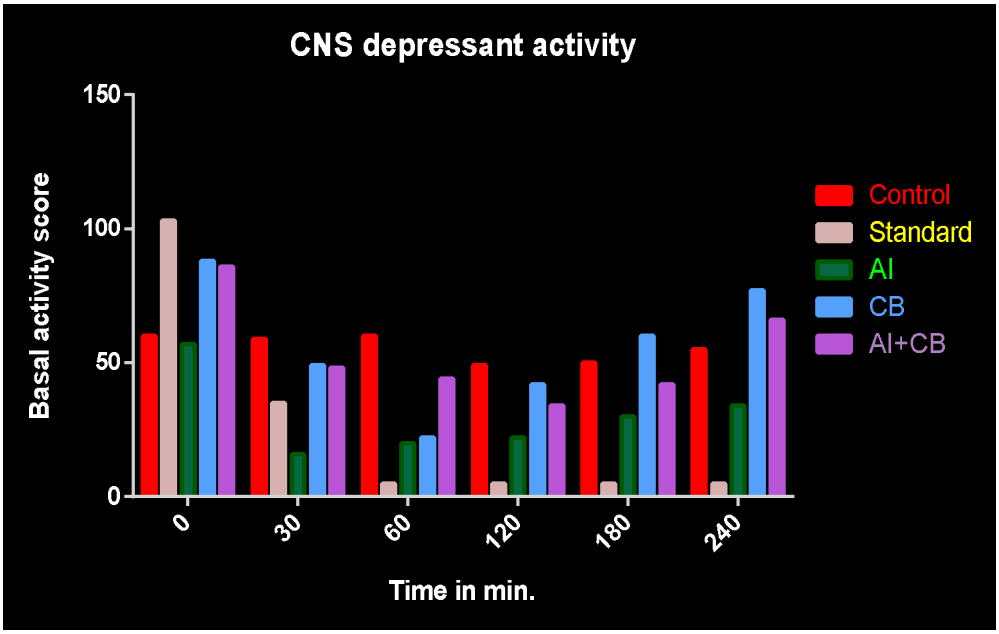

Fig. 1: CNS depressant activity of *Croton bonplandianum* and *Acalyphaindica*

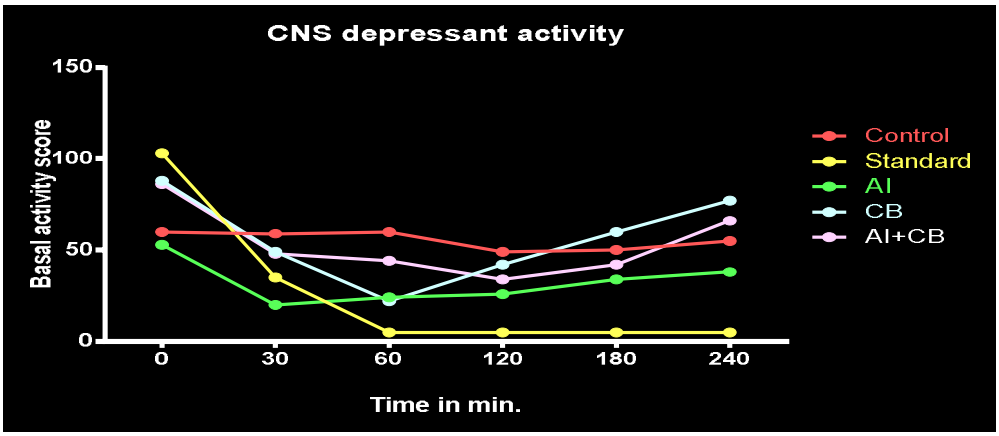

Fig. 2: CNS depressant activity of *Croton bonplandianum* and *Acalyphaindica*

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