CNS DEPRESSANT ACTIVITY OF *ANNONA RETICULATA* BARK

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Summary

The present study reports CNS depressant activity of petroleum ether, ethyl acetate and methanol extracts of *Annona reticulata* bark. Extracts were screened for CNS depressant activity by pentobarbitone-induced sleeping time and locomotor activity testing. Results indicate that petroleum ether extract showed best CNS depressant activity.

Key words: *Annona reticulata,* CNS depressant, pentobarbitone, photoactometer, diazepam.

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Introduction

Annona reticulata (Annonaceae) is a small tree found wild along streams. Leaves are membranous, oblong-lanceolate, flowers are 2-4 and fruit is woody. Tannins, catechol, sterols, glycosides, flavonoids and acetogenins were reported earlier. Traditionally the plant was used as anthelmintic, astringent and insecticidal. Leaf and stem extracts are having positive chronotropic and spamolytic effect.[1,2,3] Present study reports CNS depressant activity of *A. reticulata* bark.

Materials and Methods

Plant Material and Extraction

Bark of *A. reticulata* was collected from Ahmednagar district of Maharashtra and authenticated from Botanical Survey of India, Pune (Voucher specimen No. BRD1). Shade dried and coarsely powdered bark of *A. reticulata* was subjected to Soxhlet extractor for successive solvent extraction using solvents in the order as petroleum ether (60-80), ethyl acetate and methanol to produce PEE, EAE and ME respectively. Extracts were vacuum dried.

Animals

Male albino mice (Swiss strain) weighing 25-28 g were housed under standard laboratory conditions, in groups of five each. The animal had free access to food and water. The ethical committee of the institute approved the protocol of the study.

CNS Depressant Activity

i. Pentobarbitone-Induced Sleeping Time[4]

Male mice were divided into four groups (n=6). First group received vehicle only, second to fourth groups received PEE, EAE and ME (30 mg/kg, i.p., each) 30 min before administration of pentobarbitone sodium (40 mg/kg, i.p.) and duration of sleep was measured. The sleeping time was measured as the duration for which the righting reflex was lost.

ii. Locomotor Activity Testing[5]

Male mice were divided into five groups (n=6). First group received vehicle only, second group received diazepam (2 mg/kg, i.p.). Third to fifth groups received PEE, EAE and ME (50 mg/kg, i.p., each). Mice were placed individually in photoactometer. Basal reaction time was noted before and 30 min after the administration of treatment. A count is recorded when the beam of light falling on the photocell of photoactometer is cut off by mice.

Statistical Analysis

The data is presented as mean±S.E.M. The data was analyzed by one-way ANOVA followed by Dunnet's test. Prism graph pad 3 was used for statistical analysis. $P<0.05$ was considered significant.

Results and Discussion

Results in table-1 indicate that the sleeping time induced by pentobarbitone sodium was more prolonged after administration of PEE followed by EAE, while ME does not prolonged sleeping time significantly.

Table 1 Effect of various extracts of *A. reticulata* bark on pentobarbitone-induced sleep in mice

Treatment (Dose: mg/kg, i.p.)	Duration of sleep (min)	% increase in sleeping time
Vehicle	43.0±1.76	-
PEE (30)	92.6±0.65*	114.83
EAE (30)	62.0±2.67*	43.84
ME (30)	48.2±1.76	11.82

Observations were expressed as mean±SEM; n=6, * $p<0.05$ significant compared to vehicle.

Results in table-2 revealed that the locomotor activity count in PEE treated group was significantly reduced compared to vehicle group. Prolongation of sleeping time in pentobarbitone-induced sleeping time test is may be because of enhancement in brain GABA as it is known to have depression action in brain.[6,7] In locomotor activity testing, decrease in rearing along with locomotor activity is observed, that reveals depressive effect on CNS.[8] Overall we can say that PEE is having good CNS depressant activity.

Table 2 Effect of various extracts of *A. reticulata* bark on locomotor activity of mice

Treatment (Dose: mg/kg, i.p.)	Number of movements (for 2 min)	
	Before administration of drug	After 30 min of administration of treatment
Vehicle	122.75±0.23	131.95±0.36
Diazepam (2)	102.0±0.56	95.75±0.87*
PEE (50)	105.0±0.68	73.0±0.70*
EAE (50)	107.25±0.86	81.75±1.03*
ME (50)	96.5±0.32	80.0±0.42*

All values are expressed as mean±SEM; n=6, * $p<0.05$ significant compared to vehicle.

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