Evaluation of Neuropharmacological Effects of
Dichrostachys cinerea Root

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ABSTRACT: Dichrostachys cinerea (DC) root juice is widely used by tribals of Chittoor District against paralysis. The ethanolic extract was given at a dose of 100, 200 and 400 mg/kg/p.o. Spontaneous motor activity, analgesia, grip strength, alertness and immobility in tail suspension test (TST) and forced swimming test (FST) were assessed. The extract at given doses significantly dose dependently decreased exploratory activity, spontaneous motor activity, increased immobility time in both FST and TST, decreased climbing and swimming behaviour in FST and did not alter other parameters. Preliminary phytochemical analysis of ethanolic extract showed the presence of saponins, steroids, glycosides, carbohydrates and tannins. Results of the present study indicated that the alcoholic extract may have active constituents with CNS depressant activity and at the given doses they are devoid of memory impairment and neurotoxicity.

KEYWORDS: Dichrostachys cinerea, neuropharmacological, CNS depressant, neurotoxicity, memory impairment.

Introduction

Dichrostachys cinerea (DC) belonging to Fabaceae family is commonly called “dundu” among the Hausa speaking people of northern Nigeria and “Kora” among the Yoruba speaking people of western Nigeria (Gill, 1992). The plant is a shrub, usually attaining a height of upto 5-10 m. The leaves are compound and pinnate. The inflorescence consisting of a penduculate spike, the flowers have two sets of colours pinkish white basally and yellow terminally (Mann et al., 2003). DC root is hot, bitter, wholesome. It improves the appetite, astringent to the bowels and used in the treatment of rheumatism, strangury, urinary calculi, renal troubles and diseases of the vagina. The young shoots are bruised and applied to the eyes in case of Ophthalmological disorders (Kirtikar and Basu, 1987). DC fruit have high phenolic and tannin contents and it also contains triterpenoids and other constituents (Joshi and Sharma, 1974). Ethanolic extract of roots, fruits, leaves and seeds of Dichrostachys cinerea was reported to have antibacterial activity (Bansu and Adeyemo, 2007; Eisa et al., 2000; Staden et al., 1993).

Materials and Methods

Collection and extraction of DC root

The plant material (roots) was collected from the wild sources in the month of Nov-Dec and identified by the Botanist in the Department of Botany, S.V.University, Tirupati, A.P. The roots were washed under running tap water, shade dried and crushed to a coarse powder. The powder was passed through sieve No.40 and preserved carefully for further studies. Dried coarse powder of DC root was extracted with petroleum ether and then with alcohol. A yellowish white colour extract was obtained after evaporation of solvent. The yield was 7.2% w/w. A suspension of the extract was prepared by using 2% v/v tween 80 in distilled water.

Animals

Male Swiss albino mice weighing 25-30g were used. They were housed in groups of five under standard laboratory conditions at temperature 23 ± 1°C, relative humidity of 55±5%. The animals had access to water and pellet diet ad libitum (Hindustan Lever Foods, Bangalore, India). The animals were deprived of food 12h before experimentation. Control group animals received 2% v/v tween 80 orally and all behavioural parameters were assessed one hour after the oral administration of extract.

Neuropharmacological Tests

Test for locomotor activity

The locomotor activity was measured by using Actophotometer (Inco, Ambala, India). It consists of cage which is 30 cm long and 30 x 30 x 30 cms and has a wire mesh at the bottom, six lights and 6 photo cells are placed in the outer periphery of the bottom in such a way that a single mice blocks only one beam. Photo cell is activated when the rays of light falls on photocells, the beam of light is cut as and when animals crosses the light beam, number of cut off’s were recorded for 10 minutes (Goyal, 2005).