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Neuropharmacological actions of *Portulaca oleracea* v. *sativa*

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Portulaca oleracea (family: Portulacacea) is a warm-climate annual, used traditionally for alleviating pain and swelling (Okwuasaba et al 1987). We observed a reduction in the locomotor activity in mice and rats treated with 10% alcoholic extract of a cultivated variety, *P. oleracea* v. *sativa* during the screening for anti-inflammatory and analgesic activity. Therefore, in the present study, we decided to examine the effects of this extract on the locomotor activity, experimental convulsions and nerve-muscle preparation, in an effort to bring out possible effects of this plant on the nervous system.

A Columbus activity meter was used to measure the locomotor activity of mice (Magnus-Ellenbroe et al 1993). Animals were introduced into the individual activity cages after 30 min of administration of either saline (control), 200 or 400 mg kg^{-1} of the extract, intraperitonially (i.p.). Activity during 1-h periods was recorded for 5 consecutive hours after introduction.

Pentylenetetrazole was used to induce convulsions in mice (Nwaiwu & Akah 1986). The onset time (s.) of convulsions was recorded 1 h after the intraperitoneal administration of saline (control) or the extract.

Rat hemidiaphragm preparation was used to study the effects of the extract on skeletal muscle (Okwuasaba et al 1987).

The extract at 200 and 400 mg kg^{-1} doses, produced a significant, dose-dependent decrease in the locomotor activity in mice during the first 3 periods of observation of 1 h duration each (Table1). The 400-mg kg^{-1} dose also produced a decrease in activity during the 5th h.

The onset time of convulsion was increased significantly with two doses of the extract, in a dose-dependent manner, compared with the saline control group (control = $58 \pm 5{\cdot}7$ s., 200 mg kg^{-1} = $94 \pm 6{\cdot}6$ s, 400 mg kg^{-1} = 160 ± 42 s.).

The extract initially potentiated the amplitude of contractions of nerve-stimulated rat hemidiaphragm followed by a complete blockade at concentrations of 0.2, 0.6 and 1.8 mg mL^{-1}, supporting earlier findings (Okwuasaba et al 1987). All values are mean s.e.m.. Student's *t*-test was used for statistical evaluation ($P < 0.05$).

These preliminary results indicate that a 10% ethanolic extract *of P. oleracea* v. *sativa* could have an inhibitory action on the central nervous system as it decreased locomotor activity and prolonged onset time of pentylenetetrazole induced convulsions in the models studied. Another possible mechanism of these pharmacological effects could be the skeletal muscle relaxant activity of *Portulaca*, which has also been reported in an earlier study on *Portulaca oleracea* (Okwuasaba et al 1987).

Okwuasaba, F. et al (1987) J Ethnopharmacol., 21: 55–63.
Magnus-Ellenbroek, B., Havemann-Reinecke, U. (1993) Naunyn Schmiedebergs Arch Pharmacol., 347(6):635–642.
Nwaiwu J.I., Akah P.A. (1986) J Ethnopharmacol.., 18(2): 103–107.

Table 1. Effect of *Portulaca oleracea* v. *sativa* extract on locomotor activity

Dose (mg kg^{-1})	Total activity during each hour				
	1st	2nd	3rd	4th	5th
Control	10257 ± 894	2175 ± 510	674 ± 249	479 ± 172	503 ± 158
200	1368 ± 393*	458 ± 121*	101 ± 28*	196 ± 66	235 ± 99
400	841 ± 167*	226 ± 62*	48 ± 21*	133 ± 67	109 ± 63*

*$P < 0{\cdot}05$ compared with control.