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Evaluation of anti-inflammatory activity of *Portulaca* species

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Portulaca oleracea (family Portulacaceae) is a succulent herb, distributed mainly in the warmer parts of the world. The leaves and the juice of aerial parts of the plant have been used traditionally for treatment of swelling and inflammation (Okwuasaba et al 1986). This ethnopharmacological use of *Portulaca* has not been reported in the scientific literature. The aim of the present investigation was to evaluate the possible anti-inflammatory activity of three species of *Portulaca*.

Inflammation was induced in the hind paw of Wistar rats by injecting carrageenan subcutaneously in the subplantar region. Two dose levels (200 and 400 mg kg^{-1}) of a 10% ethanolic extract of the aerial part of each species were administered intraperitoneally or orally, 30 min after carrageenan injection. The hind paw volume was measured before and after the carrageenan challenge plethysmometrically (Burch et al 1990) at 30-min intervals for 6 h then again after 24 h. The mean values (± s.e.m.) were compared with the corresponding values of the control and diclofenac sodium (4 mg kg^{-1} , i.p.) groups using Student's *t*-test ($P < 0.05$).

The three species of *Portulaca* significantly reduced the increase in hind paw volume induced by carrageenan. This effect was comparable with that of diclofenac sodium during the first 6 h, but lasted for 24 h after treatment (Table1). Both *Portulaca grandiflora* and diclofenac sodium showed significantly more potent anti-inflammatory activity than *Portulaca oleracea* and *Portulaca oleracea* v. sativa during the first 2 h. There were no significant differences between the anti-inflammatory effects of 200- and 400- mg kg^{-1} doses of Portulaca. Oral administration of *Portulaca oleracea* v. sativa did not show any significant anti-inflammatory activity.

The results indicate anti-inflammatory action of *Portulaca* extract in the doses studied supporting the traditional use of *Portulaca* in inflammatory conditions. The observation that the extract was not active orally indicates that the active constituents might be destroyed by gastric juice or transformed to inactive ingredients by the first-pass metabolism.

Okwuasaba, F.; Ejike,C., Parry,O.(1986) J. Ethnopharmacol. 17: 139–160

Burch,R.M., Christopher,D. (1990) Arch. Pharmacol. 342:189–193

Table 1. Effect *Portulaca* sp. (10% ethanolic extract, 400 mg kg^{-1}, i.p.) and diclofenac sodium (4 mg kg^{-1}, i.p.) on the increase in hind paw volume (%) induced by carrageenan.

	Time (h)				
	0	2	4	6	24
Control	0·0	109·5 ± 6·7	109·4 ± 6·0	114·5 ± 6·1	79·8 ± 6·1
P. oleracea	0·0	59·4 ± 6·8	67·4 ± 7·9*	68·5 ± 5·0	41·4 ± 3·2*
P. oloracea sativa	0·0	62·3 ± 7·2*	67·1 ± 6·2*	55·3 ± 7·2*	27·6 ± 4·2*
P. grandiflora	0·0	30·3 ± 4·4*	57·1 ± 5·0*	61·5 ± 4·8	24·9 ± 3·7*
Diclofenac sodium	0·0	32·0 ± 4·5*	63·0 ± 7·5*	73·6 ± 8·2*	56·6 ± 7·5

*$P < 0.05$ compared with control value.