

EVIDENCE FOR A ROLE OF ADRENALS IN THE CAPSAICIN-SENSITIVE "GASTRIC DEFENCE MECHANISM" IN RATS

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Abstract. Capsaicin desensitization increases the degree of indomethacin-induced gastric ulcers in sham-operated but not in adrenalectomized rats. These results suggest that adrenals play a role in the capsaicin-sensitive "gastric defence mechanism". © 1986 Society for Experimental Biology and Medicine

Introduction. It has been shown in rats that capsaicin desensitization increases incidence of gastric ulceration stemming from pylorus ligation and acid distension (1) or indomethacin administration (2) indicating that capsaicin-sensitive fibres play a role in the "gastric defence mechanism" activated by ulcerogenic stimuli (1,2). Recently Khalil et al., (3) reported that a capsaicin sensitive mechanism regulates the adrenal response to stress. Since adrenalectomy enhances indomethacin-induced gastric ulcers (4) it appeared worthwhile to determine the possible relationship between adrenals and the capsaicin-sensitive "gastric defence mechanism".

Material and Methods. Male albino rats Sprague-Dawley strain, weighing 180-200 g, were bilaterally adrenalectomized under ether anaesthesia and given 0.9% NaCl as drinking water. Sham-operated laparatomized animals served as controls. Capsaicin (50 mg/Kg s.c.) desensitization was induced 7 days after adrenalectomy as described previously (5). On the morning of the 4th day after capsaicin desensitization a subma-

ximal ulcerogenic dose of indomethacin (10 mg/Kg) was administered by gavage to 24 h fasted animals. Four h later the animals were autopsied. Degree and incidence of gastric ulcers were scored by an observer, unaware of the treatment, according to an arbitrary scale: 0 = normal, 1 = small sized ulcers, 2 = medium sized ulcers, 3 = large sized ulcers (6). Percent incidence of ulcers was analyzed according to the Chi square method. Data relative to degree of gastric ulcers were analyzed by means of Smirnov's test (7).

Results and Discussion. Capsaicin desensitization produced a significant increase in degree of indomethacin-induced gastric ulcers in sham-operated animals (Table I). As compared to sham-operated animals bilateral adrenalectomy increased the degree of indomethacin induced gastric ulcers. On the other hand capsaicin desensitization did not increase the degree of gastric ulceration over and above that produced by adrenalectomy alone (Table I). These findings indicate that, in addition to a local release of mediators (1) and activation of inhibitory reflex arcs via the prevertebral ganglia (2), adrenal function(s) plays a role in the capsaicin-sensitive "gastric defence mechanism".

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Table I : Effect of adrenalectomy on the capsaicin-induced enhancement of indomethacin-induced gastric ulcers

Capsaicin pretreatment	Type of animals	n	Gastric ulcers	
			incidence	degree #
no	Sham-operated	15	80	1.16
yes	Sham-operated	15	100	2.33 b
no	Adrenalectomized	15	93.3	1.73 a
yes	Adrenalectomized	12	100	1.70 a

= expressed as mean score.

a = $p < 0.05$ compared to sham-operated, capsaicin untreated group.

b = $p < 0.01$ compared to sham-operated, capsaicin untreated group.

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