

References

- MAIN, I.H.M. & WHITTLE, B.J.R. (1975). Potency and selectivity of methyl analogues of prostaglandin E_2 on rat gastrointestinal function. *Br. J. Pharmac.*, **54**, 309-317.
- MERSEREAU, W.A. & HINCHEY, E.J. (1973). Effect of

gastric acidity on gastric ulceration induced by hemorrhage in the rat, utilizing a gastric chamber technique. *Gastroenterology*, **64**, 1130-1135.

- ROBERT, A., NEZAMIS, J.F. & PHILLIPS, J.P. (1968). Effect of prostaglandin E_1 on gastric secretion and ulcer formation in the rat. *Gastroenterology*, **55**, 481-487.

The effect of prostaglandin E_1 and E_2 on drug-induced release of [3H]-noradrenaline from rat mesenteric arteries

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The release of [3H]-noradrenaline ([3H]-NA) from sympathetic nerve endings by nerve stimulation is inhibited in the presence of prostaglandin E_1 and E_2 (Hedqvist, 1973). Prostaglandin E_1 and E_2 also inhibit the action of noradrenaline on a number of tissues (Bergstrom, Carlson & Weeks, 1968).

Finally, the effects of perfusion with prostaglandin E_1 and E_2 on [3H]-NA release caused by injection of NA 200 ng, metaraminol 20 μ g, octopamine 50 μ g and tyramine 100 μ g were studied and the results for prostaglandin E_1 are summarized in Table 1.

These results show that prostaglandin E_1 at each of the perfusion concentrations used has an inhibitory effect on the release of [3H]-NA by sympathomimetic amines but no effect on the spontaneous release of [3H]-NA in the absence of the sympathomimetic amines. Prostaglandin E_2 caused a similar though smaller inhibition. It appears that prostaglandins of the E series could have some role in the drug induced release of [3H]-NA from sympathetic nerve endings.

Table 1 The mean increase in 3H -noradrenaline outflow \pm s.e. following injection of each of the amines during perfusion with normal Krebs in the presence or absence of prostaglandin.

Perfusate composition	Mean spontaneous 3HNA release $d\ min^{-1}\ ml^{-1}$	Total mean increase in [3H]-noradrenaline outflow ($d\ min^{-1}\ ml^{-1}$) \pm s.e. following injection of each of the amines in the presence or absence of prostaglandin			
		Noradrenaline 200 ng	Octopamine 50 μ g	Metaraminol 20 μ g	Tyramine 100 μ g
Normal	1901	920 \pm 101	2370 \pm 210	3261 \pm 332	2522 \pm 241
Prostaglandin E_1 1ng/ml	2004	877 \pm 88	1782 \pm 177	2817 \pm 226	1593 \pm 184
Prostaglandin E_1 10 ng/ml	1986	735 \pm 72	1211 \pm 120	1872 \pm 163	1009 \pm 116
Prostaglandin E_1 100 ng/ml	1899	710 \pm 73	1089 \pm 110	1377 \pm 124	725 \pm 93

To investigate the effects of prostaglandins E_1 & E_2 on 3HNA release by sympathomimetics, the rat mesenteric artery preparation was perfused with (-)-noradrenaline-[3H] and carrier (-)-noradrenaline diluted with normal Krebs to give a final concentration of 4.2×10^{-9} Ci/ml [3H]-(-)-noradrenaline and 200 ng/ml noradrenaline respectively as previously described (George & Leach, 1972). The mesentery was perfused with this solution for 60 min after which it was then perfused with normal, tracer free Krebs solution and the spontaneous release of [3H]-NA measured over a further 60 min period as described, (George & Leach, 1975). The effect, of perfusion with prostaglandin E_1 and E_2 (1-100 ng/ml) on the spontaneous release of [3H]-NA was measured.

References

- BERGSTROM, S., CARLSON, L.A. & WEEKS, J.R. (1968). The prostaglandins: a family of biologically active Lipids. *Pharmac. Rev.*, **20**, 1-48.
- GEORGE, A.J. & LEACH, G.D.H. (1972). The effect of cations on the spontaneous and drug induced efflux of 3H -L-noradrenaline from mesenteric arteries. *Br. J. Pharmac.*, **46**, 526-527P.
- GEORGE, A.J. & LEACH, G.D.H. (1975). The involvement of Ca^{2+} and Mg^{2+} in the spontaneous and drug induced release of 3H -noradrenaline from mesenteric arteries. *Biochem. Pharmac.*, **24**, 737-741.
- HEDQVIST, P. (1973). Prostaglandin as a tool for local control of transmitter release from sympathetic nerves. *Brain Res.*, **62**, 483-488.