Prostaglandin production contributes to the contractions of the rat isolated uterus

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Prostaglandins (PGs) can be released by the uteri from several species, including women at term (Karim, 1968), guinea-pigs (Horton, Jones, Thompson & Poyser, 1971) and pregnant rats (Tothill, Rathbone & Willman, 1971). Indomethacin and other non-steroidal anti-inflammatory drugs are potent inhibitors of PG synthesis (Vane, 1971). We have now studied the effect of indomethacin upon spontaneous contractions of the rat isolated uterus and those elicited by agonists.

Uterine horns from virgin rats of the Wistar strain were superfused at 10 ml/min with Krebs solution at 37° C or bathed with De Jalon's solution at 35° C in a 15 ml bath. Submaximal contractions of the uteri were induced by oxytocin or $PGF_{2\alpha}$; indomethacin (0·25–1 μg/ml) was then added to the bathing fluid. Whereas the effects of $PGF_{2\alpha}$ were relatively unchanged (dose ratio $1{\cdot}6 \pm 0{\cdot}5$ (mean $\pm$ S.E.M.; 12 experiments)) the activity of oxytocin was reduced (dose ratio 5 ± 1; 18 experiments).

Prostaglandin output into the bathing fluid (15 ml organ bath Krebs solution 37° C) was also measured using uteri from rats which were 17–22 days pregnant. Bath fluid was withdrawn at 15 min intervals, extracted into acidified ethyl acetate and the acetate phase evaporated in vacuo at 40° C. PG-like activity was assayed in terms of $PGF_{2\alpha}$ on the rat isolated stomach strip, rat colon and chick rectum superfused with Krebs solution containing antagonists (Gilmore, Vane & Wyllie, 1968). PG-like activity (2·1–6·5 (ng/g)/ml of fluid over 15 min) was present in the bath fluid and the output was maintained over a three hour period. Indomethacin (1–4 μg/ml) reduced the output to undetectable amounts within 45 min. At the same time the spontaneous activity of the uteri was abolished.

These results suggest that intramural generation of a PG in the rat isolated uterus contributes to the maintenance of spontaneous activity and to the contractions induced by oxytocin.

We thank the M.R.C. for a grant.

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Inhibition of prostaglandin synthesis and functional hyperaemia in rabbit adipose tissue

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When rabbit epigastric adipose tissue is activated by close arterial injection or infusion of fat mobilizing substances, the release of free fatty acids is accompanied by a prolonged vasodilatation (Lewis & Matthews, 1968). In addition it was found