## A proposed role for $PGE_2$ in the genesis of stress-induced gastric ulcers

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Prostaglandins are potent inhibitors of gastric secretion in rats (Robert, Nezamis & Phillips, 1968), dogs (Robert, Phillips & Nezamis, 1968) and humans and they are able to prevent ulcer formation in rats after pylorus legation, administration of steroids or infusion of secretogogues (Robert, Nezamis & Phillips, 1968).

In our experiments the effect of $PGE_2$ administration has been evaluated on stress induced gastric ulcers in rats. $PGE_2$ (50-200-800 μg/kg s.c.) and $PGF_{2\alpha}$ (100-400-1600 μg/kg s.c.) inhibit ulcer formation in dose-dependent fashion, $PGE_2$ being 10 times more potent than $PGF_{2\alpha}$. Indomethacin, a drug known to inhibit the synthesis of prostaglandins (Vane, 1971), when administered at doses scarcely ulcerogenic at room temperature (1.25, 2.5, 50 mg/kg orally) increases the severity of gastric ulcers induced by stress, but this effect is completely antagonized by $PGE_2$ administration.

A possible role for prostaglandins on gastric homeostasis was discussed.

### References

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## The effect of mucosal damage on gastric glycoprotein synthesis in the rat

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Recently great interest has been shown in the role that gastric mucus plays in the protection of the mucosa against acid-pepsin digestion (Waldron-Edward, 1970). As glycoproteins are important constituents of gastric mucus, the effects of ulcerogenic procedures on gastric mucosal glycoprotein synthesis were investigated by measurement of the rate of incorporation of a radioactively labelled sugar.

Female Wistar rats, Biorex strain, 140-150 g, were used. Phenylbutazone (200 mg/kg), suspended in 1 ml of 0.1% aqueous Tween 80, was given to rats as a single oral dose. Stress erosions

**Table 1** The effect of various experimental procedures on the rate of incorporation of *N*-acetyl-0[1-$^3$H]-glucosamine into gastric mucosal glycoproteins

| *Treatment* | *No. of animals (n)* | *Percentage of rats with erosions* | *Rate of incorporation of [$^3$H]-GlcNAc (d/min/mg protein)* | *Percentage reduction in rate of incorporation* |
|---|---|---|---|---|
| Control | 17 | 0 | 5430 ± 720 | – |
| Starved 24 h | 6 | 0 | 2500 ± 610 ($P < 0.01$) | 54 |
| Starved + cold 6 h | 6 | 0 | 4050 ± 790 ($P > 0.2$) | 25 |
| Restrained + cold 6 h | 11 | 55 | 2940 ± 510 ($P < 0.02$) | 46 |
| * Phenylbutazone (200 mg/kg orally) | 6 | 33 | 3150 ± 560 ($P < 0.025$) | 42 |

* Rats were killed 6 h after single administration.

Portions of fundal tissue of rats were incubated with 1.0 μCi [$^3$H]-*N*-acetylglucosamine for 2.5 hours. The values shown are means for the numbers of rats (*n*) ± s.e. mean. Probability values (*P*) for the differences from controls (Student's *t* test) are also given.