

## Release of prostaglandins in canine gastric secretions in response to graded pentagastrin stimulation

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Prostaglandin (PG) E has been detected in human gastric mucosa and secretion (Bennett, Stamford & Unger, 1973) and recently PGE and A have been identified in gastric secretions of the dog (Dozois & Thompson, in preparation). Also PGE and A have been shown to inhibit gastric secretion in the dog (Nezamis, Robert & Stowe, 1971).

The aims of the present investigation were (1) to study the effect of graded doses of pentagastrin on the levels of prostaglandins in gastric juice; and (2) to establish if the amounts of prostaglandins present in gastric secretions correlate with the acid secretory rates.

Dose-response curves to pentagastrin (12.5, 25,

submaximal, maximal and supramaximal gastric acid responses. PG activity was estimated, after extraction and thin layer chromatographic separation, by radioimmuno-assay of the PGB formed by treatment with alkali. Tritiated prostaglandins were added to gastric juice for the purpose of correcting for prostaglandin recovery. PGA and PGE were present in pentagastrin stimulated canine gastric secretions (Table 1). Levels of PGA and PGE tended to decrease with increasing outputs of acid but this did not always achieve statistical significance. In one dog (A), inhibition of acid secretion was observed with a supra-maximal dose of pentagastrin ( $400 \mu\text{Eq kg}^{-1} \text{min}^{-1}$ ) and was associated with an increased release of both PGA and PGE in gastric juice. There was a relationship between levels of prostaglandins and acid responses.

Our preliminary results raise the possibility that PGA and PGE may be involved in the regulation of gastric acid secretion in the dog.

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**Table 1** The outputs of prostaglandin and acid induced by graded doses of pentagastrin.

Dog	Pentagastrin ( $\text{ng kg}^{-1} \text{min}^{-1}$ )	Acid output	PGA	PGE
		( $\mu\text{Eq/min}$ )	( $\text{pg/min}$ )	
		mean $\pm$ s.e.	mean $\pm$ s.e.	mean $\pm$ s.e.
A	50	(2) 221.2 $\pm$ 0.61	202.5 $\pm$ 87.5	137.2 $\pm$ 59.4
	200	(2) 319.9 $\pm$ 13.0	180.3 $\pm$ 15.0	124.2 $\pm$ 21.4
	400	(2) 198.0 $\pm$ 7.71	250.1 $\pm$ 14.2	193.0 $\pm$ 42.9
B	12.5	(2) 210.3 $\pm$ 11.9	107.0 $\pm$ 55.2	220.7 $\pm$ 23.2
	50	(2) 315.0 $\pm$ 48.9	132.4 $\pm$ 5.1	137.1 $\pm$ 23.8
	200	(2) 366.4 $\pm$ 29.9	81.6 $\pm$ 8.1	126.4 $\pm$ 20.9

50, 100, 200 and  $400 \text{ ng kg}^{-1} \text{min}^{-1}$ ) infused i.v. for 3 h were constructed in two gastric fistula dogs. Outputs of acid ( $\mu\text{Eq/min}$ ) and PG contents ( $\text{pg/min}$ ) were measured in gastric secretions induced by doses of pentagastrin producing

### References

- BENNETT, A., STAMFORD, I.F. & UNGER, W.G. (1973). *J. Physiol.*, **229**, 349.  
 NEZAMIS, J.E., ROBERT, A. & STOWE, D.F. (1971). *J. Physiol.*, **218**, 369.