

SERUM GASTRIN IN NEWBORN, SUCKING AND WEANED PIGS

P.D. CRANWELL* and J. HANSKY**

Hormonal influences are probably important in the development of the secretory capacities of the stomach (Cranwell & Titchen, 1976). Gastrin has a trophic effect on the gastric mucosa in adult animals (Johnson, 1977) but such a role in the neonate is unknown. This study reports serum gastrin concentrations in pigs in the first 6 weeks of life, a period of rapid increase in gastric secretory capacity (Cranwell, 1977).

In 4 litters, blood was obtained by silastic catheters established in the jugular vein. Three of the litters were given access to solid food at 13 d of age (creep-fed) and were weaned at 21 d of age. The fourth litter was reared solely on sow's milk (milk-fed) throughout the 6 week experimental period. Blood was obtained twice daily, 15-30 min after observed sucking or eating. Thirty-six fasting-feeding experiments were performed with 13 of the pigs, 21-42 d of age; blood was taken every 30 min over a 4-5h period. Serum gastrin was measured by radioimmunoassay (Hansky *et al.* 1971).

In two of the litters in which blood was obtained from the umbilical cord before, and by vena cava puncture after the first sucking, serum gastrin concentrations were similar (Table 1). Serum gastrin remained unchanged during the first 13 d of life, while the pigs received sow's milk only, but was significantly greater ($p < 0.001$) than at any later period. From 14 to 42 d of age no significant change occurred in serum gastrin either between or within treatments.

TABLE 1. Serum gastrin concentrations of pigs (pg/ml)

Age	Mean \pm SD		Milk-fed		Mean \pm SD		Creep-fed	
			No. Samples	No. Pigs			No. Samples	No. Pigs
Birth (pre-sucking)	144	81	15	15	-	-	-	-
Birth (post-1st sucking)	157	83	15	15	†			
4 - 13 d	143	71	91	10	†			
14 - 21 d	88	29	37	4	89	34	89	12
22 - 42 d	82	30	70	4	84	32	162	8

† Creep-fed pigs received only sow's milk during this period

Fasting serum gastrin was similar in both milk-fed (67 ± 12 pg/ml) and creep-fed pigs (73 ± 15 pg/ml) and following feeding or sucking there was a significant rise in serum gastrin in both groups. However, post prandial serum gastrin concentrations in the creep-fed pigs were significantly greater than the corresponding values for the milk fed pigs.

The finding that the pig has a high gastrin level up to 2 weeks of age, together with the greater post prandial gastrin response after solid food suggests a possible role for this hormone in early gastric development.

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* School of Agriculture, La Trobe University, Bundoora, Vic. 3083.

** Department of Medicine, Monash University, Vic. 3004.