PASSIVELY ACQUIRED ANTIBODIES TO SOMATOTROPIN RELEASE INHIBITING FACTOR (SRIF) IMPROVES THE GROWTH OF SUCKING PIGLETS

S.L. WESTBROOK and G.H. McDOWELL

Recently we observed that antibodies to SRIF ingested with colostrum and milk increased appetites which, together with improved milk yields of immunised ewes, supported increased growth of sucking lambs (Westbrook et al. 1994). The present study was conducted to determine effects of SRIF antibodies acquired after birth on gastrointestinal function and growth of sucking piglets. Ten pregnant gilts (Landrace x Large White) were allocated to two treatment groups and injected with bovine serum albumin (BSA) (non-immunised; NI) or SR1F/BSA (immunised, I), emulsified in a non-irritant marine oil, at c. 45, 65 and 90 days of pregnancy. Liveweights of the piglets were measured at parturition and weekly thereafter. On days three and 21 post-partum, separate groups of eight piglets from each treatment were surgically modified to determine gastric acidity and milk clotting activity (MCA) in response to infiusions of pentagastrin at a rate of 10 μg/kg/h. Birthweights (mean ± sem) and the number of piglets born alive (n) were similar (P>O.1) for both treatment groups (NI: 1.3 ± 0.02 kg, n=44) v (I: 1.4 ± 0.04 kg, n=42). However, over the three weeks from birth, piglets from I dams grew some 20% faster than corresponding NI piglets (280 ± 9.5 v 223 ± 4.4 g/day; P<0.01). The secretion of gastric acid per gram of stomach weight (Sw) was retarded significantly (P<0.01) in response to pentagastrin infusion, at three and 21 days post-partum, for I piglets relative to corresponding NI piglets (see Figure), while basal and pentagastrin-stimulated MCA remained similar for both groups irrespective of age.

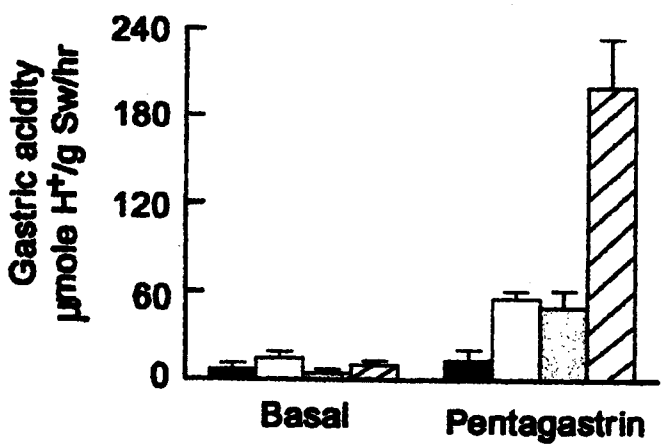

Figure. Gastric acid output for piglets from I (■) or NI (□) gilts at day 3 and piglets from I (▩) or NI (▨) gilts at day 21. Plotted values are mean ± standard errors of means.

It is concluded that antibodies to SRIF, acquired postnatally from colostrum and/or milk, acting either locally in the gut or via the circulation, neutralised the effects of SRIF and altered gastric function. Reduction in the secretion of gastric acid, whatever the cause, with no significant change in MCA, is likely to have enhanced digestion and hence improved the growth of piglets from I dams.

WESTBROOK, S.L., MOHAMMED ALI, A. and MCDOWELL, G.H. (1994). Aust. J. Agri. Res. 45:293.

School of Agriculture, La Trobe University, Bundoora, Victoria 3083