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Soyabean antigen survival along the digestive tract of the dairy calf at weaning. JP Lallès¹, LMJ Heppell², JW Sissons², R Toullec² (¹ INRA, Laboratoire du Jeune Ruminant, 65 rue de Saint-Brieuc, 35042 Rennes Cedex, France; ² AFRC, IGAP, Church Lane, Shinfield, Reading, RG2 9AG, UK)

Glycinin and β -conglycinin, major globulins of soyabean meal (SBM), appear to induce digestive disturbances in the preruminant calf fed SBM milk replacers and are resistant to digestion (Sissons, 1982). Ruminating calves fed SBM raise systemic antibodies against soya proteins (Lallès *et al*, 1991) but the extent to which these proteins escape digestion is unknown and was studied in the present work.

Results and Discussion

The SBM feed was as antigenic as raw (RSF) or heated (HSF) soyabean flour since the titres of glyc and β -cong were 6 and 8, 7 and 9, 7 and 8 for the feed, the RSF and the HSF respectively. Preliminary results indicate that immunoreactive glyc and β -cong were not present in digesta before dry feed intake. At weaning these globulins were detected in the rumen fluid (fig 1). However, in contrast to β -cong, glyc appeared to be almost absent from the duodenal and ileal digesta, indicating the survival of the former along the gut. The high resistance of β -cong to digestion in the young ruminant agrees with observations in digesta from soya-fed preruminant calves (Sissons, 1982). In conclusion, antigenic soya proteins escape ruminal digestion in the weaned calf. They are probably involved in the prolonged stimulation of the systemic immune system and related antibody production observed (Lallès *et al*, 1991).

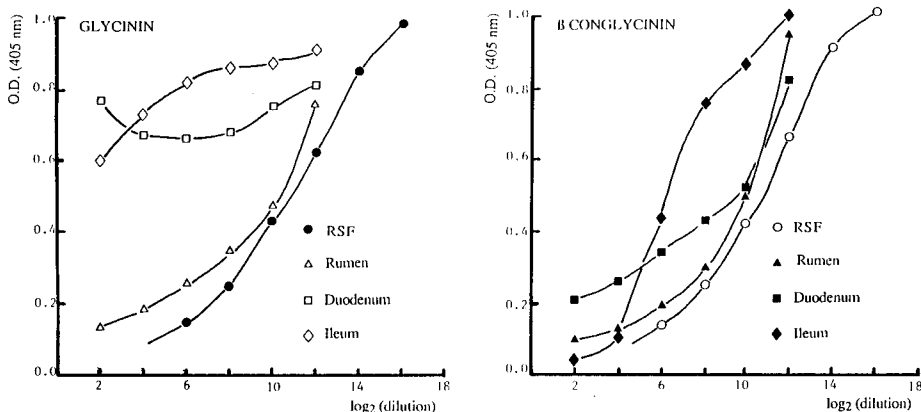


Fig 1. ELISA of glycinin and β -conglycinin in RSF and calf digesta at weaning.

Material and Methods

A concentrate ration containing SBM was fed to 6 calves between 7–20 wk of age. After being fed whole-milk, the calves were weaned from 7–10 wk of age. Digesta were collected through weaning (Lallès and Poncet, 1990). Immunoreactive glycinin (glyc) and β -conglycinin (β -cong) were assayed in feeds and digesta by ELISA (Heppell *et al*, 1987) using antibodies against native proteins.

References

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