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Antigenicity of dietary protein from soyabean meal and peas in the dairy calf throughout weaning. JP Lallès¹, LMJ Heppell², JW Sissons², R Toullec¹
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Introduction

The introduction of soyabean (SBM) flour into milk replacers for preruminant calves causes the development of severe digestive disturbances and systemic antibodies (Abs) against native globulins (Kilshaw and Sissons, 1979). Antigenic soya has also been linked with transient hypersensitivity and diarrhoea in early weaned piglets (Miller *et al*, 1984). In contrast, ruminating calves appear to tolerate high levels of dietary SBM. In this work, we studied a systemic immune reaction to dietary protein after weaning

trates. Abs were assayed in jugular sera by passive haemagglutination.

Results and Discussion

None of the calves showed specific Abs against plant-protein before dry feed consumption, suggesting that their dams had eaten little or no SBM or PM (table I). However, within 3 wk after starting dry feed feeding, the ruminating SBM-fed calves developed a mild immune response against glycinin and β -conglycinin ($P < 0.01$). This was not observed in the preruminants fed a SBM isolate (Nunes do Prado *et al*, 1989). The PM-fed calves raised Abs against legumin ($P < 0.01$) but not against vicilin ($P > 0.05$), which agrees with results in the preruminant (Nunes do Prado *et al*, 1989). In conclusion, ruminating calves fed legume-protein can develop a systemic immune response. This could continue whilst the calves consume the proteins, and shows that their antigenicity is not abolished by rumination. Whether they cause an allergic reaction in this case has to be studied.

Table I. Influence of age and diet on systemic Ab titres (passive haemagglutination, log₂).

Ration	Antigen	Wk 5-6	Wk 9-10	Wk 15-16	Wk 19-20
SBM	Glycinin	0.0 (0.0)	1.5 (0.4)	3.3 (0.8)	4.1 (0.8)**
	β -conglycinin	0.0 (0.0)	1.0 (0.2)	2.7 (0.7)*	4.3 (0.9)**
PM	Legumin	0.0 (0.0)	1.3 (0.8)	2.3 (0.9)	3.6 (1.3)**
	Vicilin	0.0 (0.0)	0.3 (0.3)	0.7 (0.5)	1.3 (0.7)

Difference from values at 5-6 wk: * $P < 0.05$; ** $P < 0.01$.

calves onto a dry feed containing SBM or pea meal (PM).

Material and Methods

Changes in systemic Ab titres against purified glycinin and β -conglycinin of soya and legumin and vicilin of peas were studied up to 20 wk in 2 groups of 6 calves each weaned between 7-10 wk of age onto SBM- or PM-based concen-

References

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