

AVAILABILITY OF PHOSPHORUS IN SOYABEAN MEAL AND FIELD PEAS FOR GROWING PIGS

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Most of the phosphorus (P) recommendations for pigs are based on total P as values for available P have not yet been fully established. A slope-ratio assay technique has been developed by Cromwell (1980) to determine available P in feed ingredients for pigs. In this assay, test meals are evaluated relative to the availability of monosodium phosphate (taken as 100% P availability). Bone bending moment (BBM) is used to assess response rather than growth rate as the former is a more sensitive parameter of P metabolism. Linearity of response is necessary for the assay to be valid. The objective of this experiment was to determine the availability of P in soyabean meal and, field peas using this assay.

Sixty female pigs averaging 20 kg were allotted to ten different diets and fed three times maintenance requirement for energy over a 35 day period. Three levels of P (3.0, 3.5 and 4.0 g/kg) from monosodium phosphate, were added to a basal soyabean meal sugar-based diet (containing 2.5 g/kg P) to determine the response to P. Similarly, three levels of either soyabean meal or field peas were incorporated into the basal diet to supply the same levels of total P as contributed by monosodium phosphate. Metacarpal bones were collected at the end of the experiment for BBM determinations.

BBM of the metacarpal bones responded linearly to the diets containing monosodium phosphate ($P < 0.01$) and field peas ($P < 0.05$) but not to the diets containing soyabean meal (Table 1).

Table 1 BBM (kg.cm) of metacarpal bones as affected by dietary P levels

Diet	P (g/kg) in the diet				Statistics		
	2.5	3.0	3.5	4.0	Linearity	Slope	Slope ratio
Basal	26.4	-	-	-			
Monosodium phosphate	-	31.6	33.2	38.9	**	77.9	
Soyabean meal	-	26.8	25.4	30.1	n.s.	19.0	
Field peas	-	26.4	30.5	31.2	*	36.5	0.47

For field peas, the availability of P was 47% which is high compared to other vegetable protein values (Cromwell 1980). For soyabean meal, the results were not calculated as the response was non linear. This lack of a significant linear response to P may have been due to the very low levels of available P contributed by the soyabean meal. A greater intake could be achieved by increasing the inclusion level of soyabean meal or by feeding the pigs *ad libitum*. This may make the response more sensitive.

CROMWELL, G.L. (1980). Feedstuffs 52 (9): 38.

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