TOLERANCE OF GROWING PIGS TO TRYPSIN AND CHEMOTRYPSIN INHIBITORS IN CHICKPEA (CICER ARIETINUM) AND PIGEON PEA (CAJANUS CAJAN) MEALS

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Trypsin (TX) and chymotrypsin (CI) inhibitors are widely distributed among grain legumes (Saini, 1989) and interfere with the digestion of proteins in the pig. However, there is virtually no information on the tolerance of the growing pig to these inhibitors. The study aimed to provide this information,

All diets were formulated to an estimated 15 MJ of digestible energy (DE) /kg and a determined 0.75 g lysine/MJ DE. The control diet was formulated from wheat and soyabean meal. Inclusion levels of 250, 500 and 750 g/kg of Opal chickpeas, dehulled Tyson chickpeas and dehulled Hunt pigeon peas were incorporated into the control diet at the expense of wheat and soyabean meal. Supplements of soyabean oil were used to maintain the dietary DE concentration, whilst supplements of free amino acids were used to maintain an adequate ratio of essential amino acids, relative to lysine. TI and CI concentrations in the wheat and the protein sources *were* determined as outlined by Saini (1989). Six pigs were allocated at 20 kg live weight to each diet and diets were offered *ad libitum.* They were slaughtered at 50 kg live weight and carcass quality assessed.

Table 1 Response of pigs fed diets containing soyabean meal *or* graded levels of chickpea and pigeon pea meals *ad libitum* during the 20-50 kg growth phase

Diet:	Soya	Opal chickpea			Tyson chickpea			Pigeon pea			s.e.m.
		250	500	750	250	500	750	250	500	750	
TI (g/kg)	0.2	1.2	2.2	3.2	1.7	3.2	4.7	1.4	2.5	3.6	
CI (g/kg)	0.2	0.9	1.5	2.2	1.6	3.1	4.5	0.8	1.5	2.1	
Gain (g/d)	930	930	940	880	900	880	860	860	710	660	32
Feed intake (g/d)	1700	1760	1720	1740	1760	1740	1760	1850	1530	1580	72.7
FCR	1.8	1.9	1.8	2.0	2.0	2.0	2.0	2.2	2.2	2.4	0.08
P2	10	10	10	11	11	11	11	11	10	11	0.7

There was no effect of inclusion level of the two chickpea meals on growth responses ($P > 0.05$). In contrast, the addition of pigeon pea meal linearly depressed growth rate ($P < 0.001$), feed intake ($P < 0.05$) and feed conversion ratio (FCR) ($P < 0.05$). Mean growth responses and FCRs of pigs fed pigeon peas *were* inferior to those of the pigs fed the other protein sources ($P < 0.001$).

These results indicate that the growing pig can tolerate at least 4.7 and 4.5 g/kg of TI and CI inhibitors respectively, contributed by chickpea meals. For pigeon pea meal, either the tolerance to the protease inhibitors is lower, or some other anti-nutritional factor/s contributed to the depressed performance.

SAINI, H.S. (1989). In "Recent Advances *of* Research in Antinutritional Factors in Legume Seeds", p. 249, editors J. Huisman, T.F.B. van der Poel and I.E. Liener. (Pudoc: Wageningen).

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