A COMPARISON OF ILEAL DIGESTIBILITY USING CANNULATION AND DISSECTION TECHNIQUES

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Ileal digestibility is widely used in diet formulation for pigs, and is normally determined using T-piece or re-entrant cannulas. Ileal cannulation allows multiple sampling from a single animal and causes little disturbance to the digestive tract. Leakage around the cannula is prevalent, however, and the studies are consequently highly labour intensive. An alternative is the intact ileal dissection technique involving removal of the terminal ileum and the collection of its contents.

During an investigation into the ileal digestibility of lysine in heat-treated field peas, results were compared from ileal cannulation and dissection techniques respectively (Table 1). Four male pigs (40-45 kg) fitted with T-piece cannulas were utilised in the cannulation study. All pigs were fed 4 diets (4x4 Latin square) for a period of 7 days prior to a continuous 2 day collection period. The ileal dissection procedure involved 24 pigs of both sexes (35-45 kg) assigned to 6 blocks. Each pig was fed its allocated diet for 7 days after which the terminal ileum and its contents were removed under anaesthesia prior to the animal being euthanased. The sampling site ranged between the final 140 and 15 cm of the ileum depending on the amount of ileal digesta present. Chromic oxide was used as a marker in both studies.

Table 1 Ileal digestibility of lysine in raw and heat-treated field peas using cannulation and dissection techniques

Experimental technique	Heat treatments				Statistics				
	0	110°	135°	150°	Diet	Raw v 110°C	Lin	Quad	SEM
Cannulation	0.80	0.84	0.80	0.80	NS	NS	NS	NS	0.013
Dissection	0.76	0.83	0.81	0.75	*	*	*	NS	0.020
Combined analysis	0.78	0.84	0.80	0.78	*	*	**	NS	0.014

NS, P>0.05, * P<0.05, ** P<0.01

Both techniques revealed a similar trend in ileal digestibility with an increase in heat-treatment. Despite higher variability, the ileal dissection technique exhibited significant differences between the respective heat treatments as a result of increased replication. Statistically, the sensitivity of analysis was further increased by combining results from the respective trials, confirming the importance of replications in these studies.

Results confirm those of Kies et *al.* (1986), that sampling site has little influence on apparent digestibility when using the dissection technique. It is also important to note that the stress imparted on the animal, surgical proficiency, and diet consistency will largely influence the success of this technique. If these factors are favourable, reduced experimental time and labour together with comparitively accurate results makes ileal dissection a viable alternative to the ileal cannulation procedure.

Kies, A.K., Moughan, P.J., and Smith, W.C., (1986). Anim. Feed Sci. and Technol., 16:169-178.

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