

### The response of 14 day weaned pigs to dietary lysine

DJ Kerton<sup>1</sup>, SL Shaw<sup>1</sup>, JR Pluske<sup>2</sup>, RJ Campbell<sup>3</sup>, PD Cranwell<sup>4</sup>, RH King<sup>1</sup>, FR Dunshea<sup>1</sup>

<sup>1</sup>Victorian Institute of Animal Science, Private Bag 7, Sneydes Road, Werribee, VIC 3030

<sup>2</sup>School of Veterinary Studies, Murdoch University, Murdoch, WA 6150

<sup>3</sup>Bunge Meat Industries Limited, Corowa, NSW 2646

<sup>4</sup>PD Cranwell Consultants, PO Box 620, Rosanna, VIC 3084

Pigs are commonly weaned at 23-27 days of age. However, the production of milk by the sow reaches a peak at 10-14 days of lactation after which milk supply limits growth (1). By weaning early and providing pigs with a suitable high quality diet it may be possible to realise more of this potential growth. Lysine is generally the first limiting amino acid in pig diets and the current estimate of requirement for weaner pig is 0.67 g available lysine/MJ DE (2). Since it is not known what effect early weaning has on lysine requirements, this experiment was designed to investigate the interactions between weaning weight and dietary lysine in pigs weaned at 14 days.

Thirty five heavy ( $6.0 \pm 0.41$  kg; mean  $\pm$  standard deviation) and 35 light ( $3.6 \pm 0.35$  kg) male pigs were weaned at 14 days into individual weaner pens. The temperature of the room was maintained at 28-30°C with further heating provided by heat lamps over each pen. Pigs were randomly allocated to one of seven diets formulated to contain 15.5 MJ DE/kg and from 0.50 to 1.30 g available lysine/MJ DE. Diets were formulated by diluting the summit diet with a sugar:starch (1:1) mix. Feed and water were offered ad libitum until slaughter at  $10.4 \pm 0.51$  kg live weight. Since there were no interactions only the main effects of dietary lysine are tabulated.

	Available dietary lysine (g/MJ DE)							Sed	Significance <sup>1</sup>		
	0.50	0.63	0.77	0.90	1.03	1.17	1.30		LL	QL	W
Daily gain (g/d)	184	200	219	207	209	215	219	21.4	0.031	0.333	0.007
Feed intake (g/d)	436	428	400	346	331	333	327	37.8	<0.001	0.179	0.050
Feed:gain	2.40	2.16	1.86	1.69	1.61	1.56	1.49	0.19	<0.001	0.010	0.262

<sup>1</sup>LL= linear effect of lysine; QL= quadratic effect of lysine; W= weight effect

Daily gain between weaning and 10 kg live weight was greater for the light pigs (219 vs 196 g/d) although they took longer ( $P < 0.001$ ) to reach 10 kg liveweight (32.1 vs 22.7 days). Broken stick analysis indicated that daily gain was maximised at 0.74 g available lysine/MJ DE. Feed intake was greatest for the lowest lysine level and declined with increasing lysine level. Feed:gain decreased with increasing dietary lysine and was not minimised within the range of dietary lysine levels utilised. While pigs consuming the diets containing the lower lysine levels grew well, the feed:gain data suggest that they were depositing more fat than pigs consuming diets with higher lysine levels. This may have consequences for later growth. Proximate analyses of the carcasses of these pigs may provide further information about the response to lysine in pigs weaned at 14 d. Supported in part by the Australian Pig Research and Development Corporation.

1. Dunshea FR, Auldish, DE, King RH. The growth potential of pigs before weaning. In: Proceedings of the Australian Association of Pig Veterinarians. 1995:67.
2. Standing Committee on Agriculture. Feeding standards for Australian Livestock. Pigs. CSIRO, Melbourne. 1987.