

The Synergistic Effects of Ractopamine and Porcine Somatotropin on Finisher Gilt Performance.

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Ractopamine hydrochloride (Paylean[®], RAC, Elanco Animal Health Pty Ltd, Macquarie Park, NSW) is an approved ingredient for pigs used to increase lean tissue growth and improve production efficiency (Dunshea *et al.*, 2005). Porcine somatotropin (Reporcin[®], pST, OzBioPharm Pty Ltd, Knoxfield, VIC) is a protein naturally produced by the pig that induces the redirection of nutrients towards increased muscle growth and decreased fat growth (Dunshea *et al.*, 2005). Recent research (Rikard-Bell *et al.*, 2009) has shown that combining RAC and pST in the last two weeks of production improves feed efficiency. The aim of this experiment was to evaluate changes in production efficiency obtained by combining RAC and pST in the last four weeks of growth.

Twenty pens of gilts, approximately 45 gilts/pen, were allocated via a randomised block (blocked on weight) to one of five treatments, fed for 28 d prior to sale. Treatments consisted of a control diet (13.4 MJ digestible energy (DE)/kg, 0.55 g available lysine (AvL)/MJ DE), a high specification diet (14.0 MJ DE/kg, 0.70 g AvL Lys/MJ DE) without RAC, a high specification diet with RAC (5 ppm), a high specification diet with RAC plus daily pST (5 mg/d) and a high specification diet with RAC plus pST in oil injected twice per week (15 mg Tuesday, 20 mg Friday). Porcine somatotropin was administered during the final two weeks. Data were subjected to an analysis of variance and means separated by least significant differences ($P < 0.05$).

Table 1. Effect of diet density, ractopamine (RAC) and somatotropin (pST) on average daily gain (ADG), average daily feed intake (ADFI) and feed conversion ratio (FCR) in gilts (75.4 ± 3.3 kg) for the four week finisher phase and average daily feed intake (ADFI pST) in the final two-week pST treatment phase ($n=4$).

	Treatment ¹					SED	P value
	A	B	C	D	E		
Final weight (kg)	96.3	97.4	99.7	100.8	100.8	3.10	0.504
ADG (kg/d)	0.735 ^a	0.783 ^a	0.865 ^b	0.915 ^b	0.906 ^b	0.04	<0.001
ADFI (kg/d)	2.57	2.59	2.58	2.39	2.42	0.08	0.069
FCR	3.50 ^c	3.31 ^c	2.99 ^b	2.61 ^a	2.68 ^a	0.13	<0.001
ADFI pST (kg/d)	2.68 ^b	2.63 ^b	2.67 ^b	2.29 ^a	2.37 ^a	0.09	<0.001

^{abc}Means in a row with different superscripts differ significantly ($P < 0.05$). ¹A - Control, B - High Specification (Hi-spec), C - Hi-spec with RAC, D - Hi-spec, RAC, daily pST, E - Hi-spec, RAC, twice weekly pST; SED, standard error of difference; n, number.

Average daily gain was significantly increased by the incorporation of RAC into the diet ($P < 0.001$), although non-significant additive effects were seen for both diet density and the use of pST. Average daily feed intake was not altered by the inclusion of RAC, but was significantly reduced through the use of pST ($P < 0.001$), whether through daily or twice weekly injections, during the final two weeks. Whilst the inclusion of RAC alone significantly improved feed conversion, combining its use with pST led to even greater improvement ($P < 0.001$). RAC and pST have additive effects on growth rate in finishing gilts, whilst pST can significantly reduce feed intake and subsequent FCR. The non-significant difference in response between daily or twice-weekly administration of pST allows for a more practical application of pST and confirms the efficacy of these products used alone or in combination under commercial conditions.

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