Combining a Ractopamine Feeding Regime and Porcine Somatotropin Has Additive Effects on Finisher Pig Performance

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Treatment of finisher pigs with dietary ractopamine (RAC; Paylean®, Elanco Animal Health, NSW) improves daily gain and feed efficiency commensurate with increased protein deposition in finishing pigs (Dunshea *et al.*, 1993). However, effects of RAC on P2 fat deposition are equivocal. Dunshea *et al.* (1993) found no change in gilts and barrows, whilst a trend towards reduced P2 depth was observed in boars fed dietary RAC. Exogenous porcine somatotropin (pST; Reporcin®, OzBioPharm Pty Ltd, Victoria) improves daily gain and feed efficiency and increases the ratio of lean to fat in carcases of boars, gilts and barrows (Campbell *et al.*, 1989). As both technologies are applied at the end of the finishing phase, it is of interest to determine whether a combination of RAC and pST has additive effects on pig performance.

This study involved 48 individually penned pigs in a 2x3 factorial design with 2 sexes (gilts, boars) and 3 RAC dose regimes (0 ppm, 5 ppm, and 5 ppm) for 28 d, respectively, plus daily pST (5mg/ml) injections for the last 14 d (RAC+). All diets were formulated to contain 13.9 MJ digestible energy (DE)/kg and 0.62 g available lysine/MJ DE. Pigs were weighed at -7, 0, 7, 14, 21 and 28 d and voluntary feed intake (VFI) determined at d 7, 14, 21 and 28. Backfat at the P2 site was determined using ultrasonics at d 0, 14 and 28. Body composition was determined using dual energy X-ray absorptiometry (DXA) at d -1, 15 and 29 of treatment. Data were analysed by analysis of variance.

Table 1. *Effect of sex and dietary ractopamine (RAC) for 28 d without porcine somatotropin (pST) and with daily pST (RAC+) over the last 14 d of treatment on growth performance and tissue deposition.*

Sex (S)...		Gilt			Boar				P-Value		
Treatment (T)...		Control	RAC	RAC+	Control	RAC	RAC+	SED	T	S	T x S
ADG	d0 – 14 (kg/d)	1.30	1.36	-	1.49	1.50	-	0.078	0.550	0.005	0.650
ADG	d15 – 28 (kg/d)	0.91	1.08	1.15	1.30	1.20	1.25	0.081	0.260	<0.001	0.025
FCR	d0 – 14 (kg/d)	2.34	2.29	-	2.15	2.13	-	0.101	0.640	0.017	0.800
FCR	d15 – 28 (kg/d)	3.10	2.88	2.17	2.87	2.66	2.43	0.299	0.008	0.710	0.420
Lean	d0 – 14 (kg/d)	0.84	0.94	-	1.15	1.14	-	0.065	0.330	<0.001	0.230
Lean	d15 – 29 (kg/d)	0.64	0.81	0.93	0.93	0.90	1.13	0.070	<0.001	<0.001	0.170
Fat	d0 – 14 (kg/d)	0.33	0.36	-	0.35	0.33	-	0.026	0.710	0.360	0.200
Fat	d15 – 29 (kg/d)	0.28	0.32	0.20	0.33	0.32	0.21	0.033	<0.001	0.280	0.740
ΔP2[1]	d0 -14 (mm)	1.75	1.44	-	2.0	1.9	-	0.46	0.227	0.504	0.770
ΔP2[1]	d14 -28 (mm)	1.75	1.69	0.69	2.3	1.6	0.8	0.42	<0.001	0.548	0.558

[1]ΔP2 calculated by difference between d0 and 14 or d14 and 28; ADG, average daily gain; FCR, feed conversion ratio; SED, standard error of difference.

In the final two weeks RAC and RAC+ increased average daily gain (ADG; P<0.05) and lean tissue deposition (P<0.001) by 0.17 and 0.29 kg/d respectively in gilts and RAC+ treatment increased lean tissue deposition in boars by 0.9 kg/d (Table 1). In the final two weeks RAC reduced change in P2 (ΔP2) in boars (P<0.05) but not fat mass, whereas the RAC+ treatment reduced ΔP2 (P<0.001) and fat tissue deposition (P<0.001) for both sexes. Only the RAC+ treatment reduced feed conversion ratio (FCR). This study demonstrates that RAC treatment alone alters lean tissue deposition in gilts and confirms that RAC treatment reduces ΔP2 in boars, whereas RAC+ further improves lean and fat tissue deposition, ΔP2, and enhances FCR in both sexes.

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Supported in part by the Pork CRC Ltd.