Altering The Timing Of An Immunocastration Vaccine to Optimise Pig Performance

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Entire male pigs are more efficient and leaner than surgical castrates, but 'boar taint' can compromise eating quality. Vaccination of boars with a gonadotropin releasing hormone (GnRH) vaccine (Improvac®, Pfizer Ltd, Parkville, VIC) can eliminate boar taint, and allows pigs to retain all of the performance attributes of entire males up until the time they receive the second vaccination, normally four to five weeks pre-slaughter (Dunshea *et al.*, 2001). However increases in backfat depth (P2) and feed conversion ratio (FCR) compared to entire males has limited the uptake of this technology. If giving the second vaccination closer to the time of slaughter could eliminate boar taint, there would be less of a cost in lost production to producers. An experiment was conducted to test the hypothesis that reducing the time between administration of the second vaccination with the GnRH vaccine and their slaughter will reduce the impact on P2 and FCR while still reducing boar taint.

The experiment involved a total of 175 Large White x Landrace entire male pigs randomly allocated into one of five treatments at approximately 16 weeks of age (58.7± 0.43 kg). Each treatment had five replicates with the pigs housed seven per pen (35 pigs/treatment) The pigs were vaccinated with the GnRH vaccine at 6, 4, 3 or 2 weeks pre-slaughter and compared against a control group that were not vaccinated (0 weeks). All pigs, apart from those on the control treatment, received the initial vaccination at approximately 10 weeks of age. All pigs were fed *ad libitum* on a diet with 13.2 MJ digestible energy (DE)/kg and 0.55 g available lysine/MJ DE. Pigs were slaughtered in a commercial abattoir at the end of the study. Data were analysed by GLM.

Table 1. *Effect of time between second GnRH vaccination and slaughter on performance and carcase characteristics in finisher pigs*[1,2]

Time (weeks)	0	2	3	4	6	SEM	P value
Final liveweight (kg)	105.2	105.3	104.4	107.6	108.7	1.00	0.158
VFI (kg/d)	2.43[a]	2.56[a]	2.75[a]	2.78[a]	2.91[b]	0.099	0.026
Average daily gain (g)	1113	1109	1102	1159	1181	26.4	0.157
FCR (kg/kg)	2.18	2.32	2.50	2.40	2.46	0.084	0.083
Carcase weight (kg)	69.0[ab]	68.6[ab]	67.7[a]	70.7[ab]	71.5[b]	0.69	0.036
P2 (mm)	11.6	11.4	12.7	12.6	13.8	0.56	0.057
Testicle weight (g)	209[a]	162[b]	134[bc]	98[cd]	64[d]	9.7	<0.001
Androstenone (µg/g)	0.91[a]	0.11[b]	0.11[b]	0.10[b]	0.13[b]	0.053	<0.001
Skatole (µg/g)	0.05	0.04	0.03	0.04	0.04	0.00	0.420

[1] Liveweight at start of the experiment used as covariate in statistical analyses (except VFI, FCR, testicle weight, androstenone and skatole); [2] Data calculated on pen basis; [abcd]Means within a row with different superscripts differ significantly (P<0.05); VFI, voluntary feed intake; FCR, feed conversion ratio; SEM, standard error of mean.

Final liveweight, average daily gain and FCR were similar (P>0.05) and there was a tendency (P=0.057) for P2 to increase with increasing time between the second vaccination and slaughter (Table 1). There were differences in voluntary feed intake (P=0.026) and carcase weight (P=0.036) between pigs vaccinated 6 weeks before slaughter and all other treatments. Control pigs had the heaviest testicle weight (P<0.001) with pigs vaccinated 6 weeks before slaughter being the lightest, but this was the same (P>0.05) as pigs vaccinated 4 weeks before slaughter. Control boars had fat androstenone levels nine times greater (P<0.001) than all GnRH vaccine-treated boars regardless of vaccination time before slaughter. These results can be used to determine the optimal time for giving entire males the second vaccination with the GnRH vaccine.

DUNSHEA, F.R., COLANTONI, C., HOWARD, K., MCCAULEY, I., JACKSON, P., LONG, K.A., LOPATICKI, E.A., NUGENT, E.A., SIMONS, J.A., WALKER, J. and HENNESSY, D.P. (2001). *Journal of Aimal Science*. **79**:2524-2535.

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