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MANIPULATION OF FAT DISTRIBUTION IN THE BELLY OF PORK CARCASSES

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The carcass quality of pigs, hence price per kilogram, is primarily determined by hot carcass weight and the subcutaneous backfat thickness at the P2 site. In recent years people have questioned whether P2 is an accurate predictor of carcass composition in modern genotypes. To date many of the reports have largely been anecdotal but recent quantitative data supports this suggestion. Trezona *et al.* (1999) reported that when the growth of pigs was manipulated through changes in feed intake the P2 changed yet the fat and lean muscle percent in the carcass remained similar, perhaps indicating a redistribution of fat within the carcass.

The export of pork carcasses to Singapore has highlighted the variability of fat content in the belly, which is considered to be a premium cut. Carcasses selected for export must meet very stringent criteria, including a specific P2, yet there are complaints that the bellies are too fat. It was hypothesised that some carcasses considered as lean could have increased belly fat due to a redistribution of fat in the carcass.

Thirty-six female pigs were sorted by weight into feeding groups of three pigs each. One pig from each group was allocated to a feeding treatment. The treatments were designed to manipulate body composition through different patterns of food intake from weaning at 5.5 kg liveweight (LW) to slaughter at 110 kg LW. Pigs in the *ad libitum, ad libitum* treatment (AA) were allowed to eat to appetite throughout the experiment. Pigs in the *ad libitum, restricted* treatment (AR) were allowed *ad libitum* intake until 50 kg LW and then restricted from 50 kg LW to slaughter by 20%. Pigs in the *restricted, ad libitum* treatment (RA) were restricted by 20% until 50 kg LW and were then allowed *ad libitum* intake until slaughter. Restricted rations were calculated from the intake of the feeding partner in the AA group. Pigs were slaughtered at a commercial abattoir and half of the carcass was collected. Subcutaneous fat thickness was measured at the P2 site and along the ventral side of the belly primal cut (AUSMEAT specifications, product 4080) at the cranial (sternum) and caudal (groin) ends, and at the last rib (navel). The half carcass and the belly primal cut were analysed for fat and lean muscle composition by dual energy X-ray absorptiometry. Statistical analysis was conducted by analysis of variance.

Table 1. The effect of feed intake patterns on carcass quality

			Half carcass (kg)		Belly (kg)		Fat thickness (mm)		
Trt	Hcwt (kg)	P2 (mm)	Lean	Fat	Lean	Fat	Sternum	Navel	Groin
AA	73.8^{a}	13.3	27.2	6.68	4.23^{a}	1.38	15.6	17.1	22.5^{ab}
AR	71.3^{b}	12.7	27.6	6.30	3.60^{b}	1.21	13.8	18.0	17.5^{a}
RA	71.6^{b}	14.0	27.1	6.65	3.57^{b}	1.26	11.8	17.0	24.4^{b}

^{ab} results in the same column with different superscripts are significantly different ($P < 0.05$).

Carcass weight was used as a co-variate when analysing the data as the hot carcass weight of the pigs from the AA treatment group was significantly higher than the other treatments. There were no differences between fat thickness at the P2 site or the total amount of fat and lean muscle. Within the belly there was no difference in total fat, however carcasses from the AA treatment had higher lean muscle. The subcutaneous fat thickness of the belly of the AR treatment pigs had less fat at the groin compared to pigs in the RA group. These results indicate that a redistribution of fat and lean muscle tissue has occurred within the belly primal cut and highlights the problems in using P2 as criteria for selecting carcasses for the Singapore market.

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