THE EFFECTS OF DIETARY ENERGY CONCENTRATION ON THE VOLUNTARY INTAKE OF GROWER PIGS FED A HIGH FIBRE DIET

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Voluntary food intake (VFI) is a major factor influencing the performance of grower pigs in Australia. However, there is insufficient information to predict the effect of dietary change on the VFI of such pigs. Thus the present experiment was conducted to study the effects on VFI and growth performance of adding fat and hence increasing the energy concentration of a low energy diet containing a high level of fibre.

Sixty entire male pigs were fed ad libitum and grown from 20 to 45 kg live weight in individual pens. They were assigned to treatments according to a randomized block design that involved ten dietary treatments in a 5 x 2 factorial arrangement. There were five levels of dietary fat from two different sources (tallow and Kitplus 9700, a blend of fats and oils). The major components of the basal diet were barley, wheat bran, safflower meal, meat and bone meal, soyabean meal, blood meal and 10 kg fat/tonne. The dietary fat content was increased to 30, 50, 75 and 100 kg/tonne in the remaining diets accompanied by a graded substitution of wheat for barley and an increasing amount of soyabean meal and blood meal. Thus, as dietary DE content increased from 11.8 to 14.4 MJ/kg, the ratio of available lysine to DE was maintained at approximately 0.64 g/MJ. The diets all contained approximately 12% acid detergent fibre.

There were no significant differences between fat sources. But there were significant differences ($P < 0.01$) in VFI and growth rate among diets with different energy content. These results are shown in Table 1. The feed spillage that occurred with certain animals could not be accurately measured. Thus the values for total feed use include both intake and spillage. A better estimate of VFI was obtained by excluding those pigs that consistently spilled feed. The results indicate that VFI was significantly reduced on the higher energy diets. However, pigs were unable to compensate for low energy diets and DE intake and growth rate was lower for pigs given the two lowest energy diets.

TABLE 1 Effects of dietary energy concentration on VFI and growth rate

	DE concentration (MJ/kg)					Coefficient of variation (%)
	11.8	12.4	13.2	14.0	14.4	
Total feed usage (kg/d)	2.18[a][1]	2.02[bc]	2.07[b]	1.95[bc]	1.92[c]	8.31
Feed intake[2]	2.07[a]	1.99[abc]	2.02[ab]	1.93[bc]	1.86[c]	7.58
Growth rate (g/d)	634[a]	661[a]	711[a]	713[b]	705[b]	7.02

[1] within rows, means not followed by the same letter are different ($P < 0.05$)
[2] for each treatment, the number of pigs included in the analysis were 7, 9, 8, 11 and 9, respectively.

For these diets which were relatively high in fibre, at least 13.2 MJ DE/kg was required to maximize DE intake and growth rate. The maximum levels of DE intake (27 MJ/d) were considerably below that previously reported (34 MJ/d) by Campbell et al. (1983) for similar pigs fed low fibre diets. Further work is required to examine the possible interaction between the effects of dietary fibre and energy content on VFI.

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