

THE EFFECT OF DIETARY HOMOARGININE ON FEED INTAKE OF PIGS

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Proteins in which the lysine has been converted to homoarginine (HA) through guanidination have been used as a means of measuring endogenous amino acid secretion in animals fasted overnight and fed a single meal of a diet in which guanidinated protein (G-protein) is the only source of protein. (Schmitz et al. 1990; Siriwan et al. 1994).

In the present study, G-protein was fed to pigs (20 kg live weight) for an extended period to represent normal feeding conditions and to investigate the relationship between dietary homoarginine level and feed consumption. A semi-purified diet based on sugar containing either casein or soyabean meal as the protein source was fed for three days. For the following three days the proteins were replaced with either guanidinated casein (G-casein) or guanidinated soyabean meal (G-SBM). The pigs were fed 1kg per day in eight equal portions. The dietary HA levels and average daily feed intakes (ADFI) are presented in the table.

G-Casein Diets			G-SBM Diets		
HA Level (g/kg)	ADFI (g/d)	Number of animals	HA Level (g/kg)	ADFI (g/d)	Number of animals
2.5	616	4	1.8	675	1
5.0	664	2	3.3	508	3
10.5	503	2	6.5	405	3
15.1	417	2	10.8	271	1
22.0	381	4	14.8	318	3

A marked reduction in feed intake was observed in growing pigs fed guanidinated diets for three days. The correlation coefficients between dietary HA level and ADFI were -0.943 and -0.879 for G-casein and G-SBM, respectively. The data indicates that in pigs fed guanidinated protein diets appetite is suppressed. It was assumed that homoarginine is converted to lysine in vivo (Steven and Bush 1950 ; Ryan et al. 1968) but if this pathway is inefficient in the pig, the reduced feed intake may reflect lysine deficiency and/or a direct effect of homoarginine on feed intake regulation.

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