

DIGESTIVE UTILIZATION AND ANIMAL PERFORMANCE OF THE PELON MEXICANO PIG FED WITH HIGH LEVELS OF ALFALFA MEAL.

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The pelon mexicano is a common race of pigs exploited in rural communities of Mexico. It is a rustic short animal with a high lipid deposit in the body. Observations in the rural areas indicate that forages represent an important fraction of their every day diet.

It has been assumed that swine are capable of using forages as a nutrient source in two essential ways: 1) By chewing, they extract juices that carry nutritious components. 2) In the cecum, as in the rumen, crude fiber is fermented in a similar way producing as a final metabolite volatile fatty acids (VFA). It was found that the energy liberated by the VFAs represents 12% of the energy required for maintenance of a pig fed 60% alfalfa meal (AM) in the diet. (Kass, Van Soest and pond, 1980 b). Never the less Gargallo and Zimmerman, (1981) working with cecectomized pigs found that the absence of the cecum does not significantly alter digestive functions, particularly cellulose digestibility.

Several authors have found that the use of a crude fiber source in diets for swine, decreases the dry matter digestibility and consequently, the growth rate (Kass et al 1980 a; Powley et al 1981).

Crude fiber sources (*Viguiera dentata*) have been used in the diet of the pelon mexicano with very average results (Robles 1977; Romano et al 1980). The utilization of dietary fiber was not reported. This experiment was carried out to investigate this factor.

Twenty-four castrated male pigs were distributed, in a completely randomized design to 4 diets. Each diet had 3 replicates. The animals were housed by pairs in pens. They had an initial body weight of  $11.1 \pm 0.9$  kg. The control diet was made with sorghum grain, soy bean meal, sugar cane molasses and minerals. The first two ingredients were partially replaced by AM at levels of 20, 40 and 60%. All diets had the same level of crude protein. Diets for animals up to 20 kg live weight had 18% crude protein. From then until the time they were slaughtered (42 kg) they received diets with 16% crude protein. All animals received an intramuscular dose of vitamins.

Digestibility of the diets was estimated twice using the acid insoluble ash as a marker for the diets (Van Keulen and Young, 1977). All animals were used to determine digestibility when they reached 20 kg. 4 animals per diet were used when they reached slaughter weight.

At slaughter time, the body composition was measured. The gastrointestinal tract was weighed in four compartments (stomach, small intestine, cecum and colon). Cecum content was sampled to analyse the VFA's.

The data were analysed statistically by analysis of variance and the means were compared for significance using student t test.

One animal of the group fed 60% AM was eliminated from the experiments because of a health problem. During the first period of growth (up to 20 kg live weight), the average daily gain was 0.22, 0.28, 0.22 and 0.14 kg; The feed to gain ratio was 4.9, 3.0, 4.7 and 6.5; and the dry matter digestibility was 84.9, 83.5, 61.7 and 56.9% for the diets with 0, 20, 40 and 60% AM respectively. Pigs fed with 20% AM in the diet had a better growth rate and feed to gain ratio compared with the control group. It is interesting to note that at this level there was no decrease in the digestibility of the diet. 40% of AM in the diet decreased ( $P < 0.05$ ) the dry matter digestibility but had no con-

sequence on the growth rate compared to the control group.

In the second period of growth (from 20 kg to slaughter) the average daily gain was 0.38, 0.35, 0.31 and 0.24 kg; The feed to gain ratio was 4.0, 4.9, 5.9 and 6.8; and the dry matter digestibility was 84.4, 82.5, 63.3 and 51.5% for the diets with 0, 20, 40 and 60% AM respectively. All results fit in a linear response. The performance of the animals fed 20% AM was not as good as that of the control group, but no statistical difference was found in these results.

The body composition results at slaughter time were as follows: Body weight 43.4, 41.8, 41.0 and 38.2; carcass yield 70.5, 70.1, 61.6 and 64.6%; carcass length 89, 85, 79 and 78 cm; Backfat 2.9, 3.0, 2.0 and 1.9 cm; Empty body weight (EBW) 41.0, 39.4, 38.2 and 34.9 kg; Stomach 0.93, 1.00, 1.34 and 1.29% of EBW; Small intestine 1.86, 1.96, 2.45 and 2.05% of EBW; Cecum 0.37, 0.36, 0.40 and 0.47% of EBW; Colon 2.53, 2.22, 2.82, 3.13% of EBW; Longissimus muscle area 27.2, 29.0, 30.9 and 22.7 cm; Acetic acid in cecum content 0.097, 0.109, 0.143 and 0.097 moles per liter; Propionic acid 0.051, 0.032, 0.047 and 0.026 moles per liter; Butyric acid 0.015, 0.013, 0.017 and 0.009 moles per liter, for the diets with 0, 20, 40 and 60% AM.

No statistical differences were found in the results of the control group and the fed 20% AM. The increasing levels of AM in the diet produced a decrease in carcass yield, carcass length, backfat and empty body weight. All the gastrointestinal tract compartments increased their weight when the AM increased in the diet. Total VFA's production had an irregular tendency.

#### CONCLUSIONS:

The pelon mexicano pig is capable of digesting alfalfa meal when it is added at a level of 20% in the diet. The animals are more capable to use this feedstuff before they reach 20 kg of live weight. A further increase in the diet provokes a decline in the performance of the animals. Comparing these results to other obtained with European races of pigs, the pelon mexicano doesn't seem to be more capable to digest high levels of alfalfa meal.

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