

The effect of breed and dietary level of avocado fat on the N and energy balance in young pigs*

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ABSTRACT

The effect of breed and dietary avocado level on the total apparent digestibility (RAD) and balance of nitrogen (N) energy, in young pigs, was studied. Four Pelón Mexicano (PM) and four Yorkshire × Landrace (Y×L) barrow male pigs (39.2 kg average initial liveweight) distributed in two groups according to a change over design in a 2×2 factorial arrangement (breed and diet) were used. The pigs received on a pair feeding basis (0.10 kg DM/kg W^{0.75} per day), the experimental diets. The diets were formulated to contain 30 or 150 g crude fat by partial replacement of the maize/soyabean meal diet by avocado (*Persea americana* Mill.) fresh pulp. The RAD of crude fat was 73.8 and 71.5% and that of N was 83.4 and 82.8 % in PM and Y×L pigs, respectively. There was no significant effect (P>0.10) of crude fat level on RAD of N and energy. N and energy balance significantly (P<0.05) favoured Y×L as compared with PM pigs. In conclusion, the poor N retention of PM pigs could be related to body composition of this local, non improved genotype. The use of avocado for feeding pigs, PM included, should determine a high digestibility of the crude fat fraction and at the same time a considerable deterioration of N retention, probably due to an unbalanced composition of amino acids. The level of avocado pulp inclusion in the diet of the pig should be involved in these circumstances.

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KEY WORDS: pig, genotype, digestibility, avocado, fat

INTRODUCTION

The Pelón Mexicano (PM) breed is a fat-type pig currently reared in Mexico in an outdoors, extensive system. These animals are considered to be descendents of Iberian pigs, which were introduced in the country some 500 years ago during Spanish colonization (Lemus and Alonso, 2005). This type of animal is particularly fed on either discarded or dropped avocado (*Persea americana* Mill.) fruits in all Mexican regions where this fruit tree is cultivated. Mexico is the first country of the world where avocado fruits are produced and exported (FAO, 2007), and discarded fruits from packing plants can account for not less than 10% of avocados (Arpaia et al., 1987; Zamora et al., 1999).

During the biological harvesting of avocados in Mexican plantations, pigs, including those from the local breeds reared by small holders, use to eat the avocado pulp from ripe fruits found on the ground, after discarding peel and seed. This practice observed *in natura*, suggested to farmers to feed pigs with avocados, and this became a common fact which is predominant when these fruits are abundant during the yearly harvesting peak. However, there is no previous information concerning the nutritive value of avocado pulp for pigs (Göhl, 1975), although some early information regarding digestibility studies in humans (Mattil, 1916; Holmes and Deuel, 1920) is available elsewhere.

The aim of the present investigation was to evaluate the effect of breed (PM and Yorkshire \times Landrace) and dietary levels of avocado pulp on the total apparent digestibility and balance of N and energy in young pigs. A preliminary report related to this subject was previously published by Grageola et al. (2008b).

MATERIAL AND METHODS

Animals and feeding.

The effect of breed and dietary fat level on the total apparent digestibility (TAD) and N and energy balance, of young pigs, was studied using four Pelón Mexicano (PM) and four Yorkshire \times Landrace (Y \times L) barrow male pigs weighing on average 39.2 kg initial liveweight at similar age. Pigs of each genotype were of similar age, and therefore different initial liveweight (PM and Y \times L, 32.6 and 45.7 kg, respectively) mainly due to the slow growth rate of PM animals (Becerril et al., 2009). The pigs were distributed in two groups according to a change over design