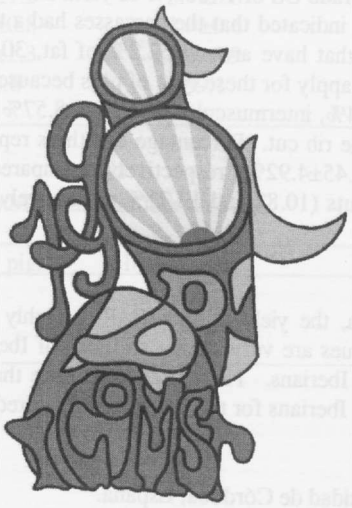
PS 1

Poster session and workshop 1

Carcass and meat quality



Monday, August 31st
17:15h-18:45h

CARCASS CHARACTERISTICS OF HAIRLESS MEXICAN PIGS

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BACKGROUND

Common production practices in rural areas in Mexico includes raising native pigs, Hairless Mexican Pigs, HMP, (Castellanos, 1984). However, this system has had some changes during the last years due to the introduction in agricultural areas of male Duroc, Landrace and Hampshire pigs. Besides that, the use of artificial insemination brought female white pigs for crosses, replacing the local genotypes. From the world porcine population, 25-35% are native pigs (FAO, 1994). FAO determined in 1993 that HMP were in extinction. It is the purpose of the meat science team at University National Autonomic of Mexico to save this specie. The studies started with the definition of the live and carcass characteristics. Common characteristics of these native pigs are the black color, the absence of hair (Castro, 1981), and the presence of high amount of fat (Montiel et al., 1997), traits that they share with Iberian Pigs, well known for their high quality meat used on the production of high priced cured products (Aparicio, 1987). Researchers agree that the native porcine population in America are descendant of those brought from Europe mainly from Spain and Portugal (Berruecos, 1972; Flores, 1992). Today, the value of the Hairless Mexican pig has depreciated due to the great amount of waste in fat, although they are very well adapted to the Mexican environment (Cenobio, 1993). However, no research has been done to know the body characteristics and carcass composition of these animals.

OBJECTIVES

The first objective was to determine the live and carcass characteristics of the Hairless Mexican pig carcasses. The second objective was to find the composition of the carcass of HMP.

METHODS

Twenty one Hairless Mexican barrows were used for this study. Animals were measured for: thoracic, abdominal and shinbone perimeters (anterior and posterior), length of the snout, and carcass length. Carcasses were evaluated using USDA muscling score, and fat was measured at the first and last rib and the last vertebrae (USDA, 1894).

After slaughter, carcasses were cut in half. The left half was fabricated into primary cuts: loin, belly, ribs, jowl, leg and shoulder (NAMP, 1988). Dissection of each piece yielded the tissue composition (muscle, fat and bone). Fat percentage included: subcutaneous, intermuscular and internal fat. Others included: tendons, nerves and blood vessels (Méndez et al., 1991).

RESULTS and DISCUSSIONS

Animals used for the study were randomly chosen from a farm, therefore weights were not uniform. Data were divided into two groups by the weight of live animals, HG: animals heavier than 100 Kg and LG: animals lighter than 100 Kg (LG). Data for the live measurements of HMP are presented in Table 1. Results from the live measurements indicated that HMP are short and wide. Table 2 shows carcass measurements and evaluation parameters of HMP. The overall carcass weight was 98.4 Kg, although standard deviation was very high. It is important to note the fat thickness on the last rib of animals heavier than 100 Kg is close to 6 cm and around 5 cm on the last vertebrae. The USDA formula was used to calculate the carcass grade. The HG had an average carcass grade of 3 (54.4 to 57.3% lean cuts) and the LG had a Grade US of 1 (60.4% of yield and over).

Finally, results of the dissection (Table 3), indicated that the carcasses had a total fat percentage of 41.4 %, 39.9 % of muscle and bone 13.5 %, compared to the Iberian pigs that have around 52.2% of fat, 30.5% of lean and bone 13.0 % (Aparicio, 1990). These results demonstrated that US grades do not apply for these type of pigs because the real yield percentage is only around 40%.

Subcutaneous fat represented 26.09±10.34%, intermuscular fat 13.31±8.57% and internal fat 2.20±2.97%. The percentage of bone was 13.49±7.23%, with the highest being the rib cut. Percentage of others represents 3.77±4.07%. Ham and shoulder had the highest muscle percentage (53.09±4.59 and 49.45±4.92%, respectively) compared to the other cuts. The least percentage of subcutaneous fat was found in the rib and jowl cuts (10.82 and 12.71% respectively). Rib, and belly cuts had the highest amount of intermuscular fat (5.55 and 3.54 %).

CONCLUSIONS

When compared to the Iberian pigs data, the yield of the HMP is highly affected by fat trimming. With respect to the composition results, percentages of the main tissues are very similar to those of Iberian pigs. Differences are likely due to the long selection process and production methods of the Iberians. Therefore, we believe that HMP could be an alternative to the white pigs and they could be used in the same manner as the Iberians for the production of cured products.

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Table 1. Means and standard deviations of the live measurements of Hairless Mexican pigs.

Variables	Overall	Animals < 100 Kg	Animals > 100 Kg
Thoracic perimeter, cm	114.7±7.4	99.9±8.3	129.5±6.5
Abdominal perimeter, cm	127.2±18.6	104.9±9.7	138.4±19.2
Shinbone anterior perimeter, cm	17.3±1.4	17.0±1.6	17.5±0.9
Shinbone posterior perimeter, cm	17.4±1.4	16.1±1.3	18.1±1
Length of the snout, cm	127.6±13.8	110.7±8.6	136.0±5.6
Carcass length, cm	81.7±6.7	73.7±4.5	85.6±2.9

Table 2. Means and standard deviations of the carcass characteristics of Hairless Mexican pigs.

Variables	Overall	Animals < 100 Kg	Animals > 100 Kg
Live weight, Kg	115.3±34.2	72.29±12.05	136.61±16.47
Carcass weight, Kg	98.4±27.6	64.4±10.7	115.3±13.8
Muscling score	2.0±0.5	1.5±0.5	2.5±0.5
First rib fat thickness, cm	5.2±1.3	3.7±0.6	5.9±0.9
Last rib fat thickness, cm	2.8±0.8	1.9±0.6	3.8±1.0
Last vertebrae fat thickness, cm	3.8±1.3	2.4±0.9	4.5±0.8
Dressing, %	86.8	89.1	84.4
US Carcass Grade		1	3

Table 3. Composition of the carcass of Hairless Mexican and Iberian pigs

Variables	Hairless Mexican pigs	Iberian pigs*
Total Fat, %	41.4	52.2
Muscle, %	39.9	30.6
Bone, %	13.5	13.0

*Adapted from Aparicio, 1990