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# Nero Siciliano pig: effect of the diet on meat quality

B. Chiofalo<sup>1</sup>, V. Lo Presti<sup>2</sup>, D. Piccolo<sup>1</sup>, G. Arena<sup>1</sup>

<sup>1</sup> Dipartimento di Morfologia, Biochimica, Fisiologia e Produzioni Animali.  
Università di Messina, Italy

<sup>2</sup> Consorzio di Ricerca Filiera Carni. Messina, Italy

*Corresponding author:* Biagina Chiofalo. Dipartimento di Morfologia, Biochimica, Fisiologia e Produzioni Animali, Sezione di Zootecnica e Nutrizione animale. Facoltà di Medicina Veterinaria, Università di Messina. Polo Universitario Annunziata, 98168 Messina, Italy - Tel. +39 090 3503592 - Fax: +39 090 3503973 - Email: biagina.chiofalo@unime.it

## ABSTRACT

In the context of a typical breeding system for the autochthonous pig races, the effects of the traditional diet (grain cereals, legumes and agro-industrial by-product) and of a commercial diet (pellets) on the meat quality of Nero Siciliano pig were studied. Thirty animals, 16 castrated males and 14 females, were divided into two groups of 15 each one homogeneous for live weight ( $32.47 \pm 1.74$  kg), sex (8 males and 7 females) and age (2 months), called "Traditional" (TRA) and "Experimental" (EXPE). Pigs of "TRA" group were fed with barleycorn (2 kg/head/day) and citrus pulp (1 kg/head/day) whereas, those of "EXPE" group received 1.3 kg/head/day of a pelleted complete feed (Dry Matter: 87.5%, on a DM basis: 18.29% Crude Protein, 3.43% Ether Extract, 6.06% Crude Fiber, 7.43% Ash) formulated to be isoenergetic and isonitrogenous with the Traditional diet. The trial lasted 93 days, preceded by a 15-day adaptation period. After the slaughter (FLW: EXPE 67.4kg vs. TRA 61.69 kg;  $P > 0.05$  and FCR: EXPE 3.71 kg/kg vs. TRA 6.65 kg/kg;  $P < 0.001$ ), chemical and fatty acid composition of the *Longissimus lumborum* muscle were determined as well as the acidic composition of the lard removed by the backfat. On the basis of the fatty acid profile, the quality indices were calculated. The oxidative stability (TBARs) of the intramuscular lipid was determined at 1, 3, 5 days after slaughtering. Data were subjected to ANOVA. Protein (EXPE 23.01 g/100g vs. TRA 23.17 g/100g) and lipid (EXPE 3.12 g/100g vs. TRA 2.69 g/100g) content of the muscle was unaffected by the diet whereas, moisture (EXPE 72.52 g/100g vs. TRA 73.072 g/100g) and ash (EXPE 1.01 g/100g vs. TRA 1.08 g/100g) levels showed significant ( $P < 0.05$ ) differences. As regards fatty acid composition of the meat, significant differences were observed for the total SFAs (EXPE 41.42% vs. TRA 38.95%,  $P < 0.01$ ) and PUFAs (EXPE 9.05% vs. TRA 12.11%,  $P < 0.05$ ) in particular for the n3 series (EXPE 0.79% vs. TRA 1.40%,  $P < 0.05$ ) and for the n6 series PUFAs (EXPE 8.11% vs. TRA 10.49%,  $P < 0.05$ ). Fatty acid composition of the lard showed significant ( $P < 0.05$ ) differences for MUFAs (EXPE 47.63% vs. TRA 49.11%) and PUFAs (EXPE 11.38% vs. TRA 10.01%); in particular significant differences for the n3 series (EXPE 0.77% vs. TRA 0.94%,  $P < 0.05$ ) and for the n6 series PUFAs (EXPE 10.62% vs. TRA 9.08%,  $P < 0.01$ ) were reported. The different distribution of the fatty acid classes in the meat and in the lard could be due to: i) the different acidic composition of the feeds (pellet vs. barleycorn + citrus pulp), ii) the different destinations of the plasmatic fatty acids during their metabolic cycle (constituents of adipose tissue, of tryglicerides, of membranes phospholipids). The quality indices have shown significant ( $P < 0.001$ ) differences only in the *Longissimus lumborum* muscle, with the highest values for the Atherogenic (EXPE 0.49% vs. TRA 0.42%,) and for the Thrombogenic indices (EXPE 1.11% vs. TRA 0.91%) in the EXPE group. No significant difference was observed for the oxidative stability of the muscle during the storage. Data show the importance to study specific diets for Nero Siciliano pig in relation to the destination of meat.

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