

# ALPHA-TOCOPHEROL CONTENT ON THE SEMIMEMBRANOSUS MUSCLE OF ALENTEJANO PIGS REARED IN INTENSIVE AND EXTENSIVE CONDITIONS

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**SUMMARY** - This trial was undertaken to determine the effect of the rearing system (intensive vs. extensive) over the content of antioxidants (alpha-tocopherol) in the meat of Alentejano pigs. Sixteen Alentejano pigs with an average body weight (BW) of 60 kg were divided in two groups: Group I (n=10) was allocated in open-air individual pens, while Group II (n=6) was maintained in a 3 ha natural pasture. Both groups were fed a commercial diet (3100 kcal ED, 14% CP, and 20 mg/kg alpha-tocopherol) at 85% *ad libitum*. All pigs were killed at 100 kg BW and carcasses were refrigerated (24 h at 4°C). Samples of semimembranosus muscle were obtained, stored under vacuum, and frozen (-30°C) until analysis. The content in alpha-tocopherol was estimated by HPLC. Results show a significant effect ( $P < 0.001$ ) on the semimembranosus content of alpha-tocopherol. Group II, with access to pasture, presented content in alpha-tocopherol of 2,81 ppm, about 2,4-times higher than Group I, without access to pasture (1,18 ppm). Such results suggest a beneficial effect of the extensive rearing system over the oxidative stability of the meat of Alentejano pigs, with repercussion on the technological quality of the meat and may be useful to discriminate the finishing feeding system.

**Key Words:** Alentejano pig, alpha-tocopherol, Semimembranosus, rearing system

## INTRODUCTION

The Alentejano (AL) pig production is characterized by the fact that the animals are reared outdoors during almost the time of the production cycle. Nowadays, the production of Alentejano pigs fulfills a double function: it provides meat for the manufacture of cured products and for fresh consumption. The manufacture industry requires pigs reared in traditional extensive system "montanheira", slaughtered at 140-160 kg BW, with 18-24 months of age. The emerging market of the fresh meat DOP requires animals with 90-120 kg LW, obtained at 10-12 months of age and implies that animals must be reared extensively. Depending on the period of the year/production cycle the ingestion of grass depends on its availability and it is controlled by the animals. The consumption of grass could vary between 1 kg to 1,5 kg.

Tocopherols (beta-, gamma- and alpha-tocopherol) have been found in plants, but alpha-tocopherol seems to be the most abundant and biologically active species in chloroplast membranes (García-Plazaola and Becerril, 1999). Tocopherols are a group of potent lipid-soluble antioxidants and the feeding background affect the deposition of tocopherols (mainly the alpha form) (Rey et al., 2006). The intake of grass and acorns by free-range reared pigs has recently been associated with the incorporation of plant phenolics in the animal tissues which could enhance their oxidative stability (Cava et al., 1998). Quantification of the tocopherols content as affected by either the time of free-range feeding or the weight gained during the fattening period outdoors could be used as a discriminant for different pig meat qualities (Rey et al., 2006).

This trial was undertaken to determine the effect of the rearing system (intensive vs. extensive) over the content of antioxidants (alpha-tocopherol) in the meat of Alentejano pigs.

## MATERIAL AND METHODS

Sixteen Alentejano pigs with an average body weight (BW) of 60 kg were divided in two groups: Group I (n=10) was allocated in open-air individual pens, while Group II (n=6) was maintained in a 3