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***Abstract*— In this study we analysed the chemical composition and physical characteristics of four muscles from Alentejano (AL) pigs, *m. Biceps femoris* (BF), *m. Semimembranosus* (SM), *m. Longissimus dorsi* (LD), and *m. Psoas major* (PM). Castrated male and female AL pigs allocated to an outdoor rearing area and fed a commercial diet offered at 85% estimated ad libitum consumption, were slaughtered at ~105 kg live weight. BF, SM, LD, and PM individual samples were obtained from the left side of each chilled carcass. Significant differences were mainly found on the chemical composition and colour of the muscles. LD muscle presented the highest amount of intramuscular fat (5.9%), and SM the lowest (3.4%). These differences agree with the lower moisture content on LD (69.2%) and higher content on SM (73.1%). The myoglobin content was higher on PM (3.81 mg/g), followed by SM (2.74), BF (2.30), and LD muscle (1.21). These myoglobin contents explain the obtained physical colour measures: the PM muscle presented the higher (P<0.001) CIE a* and C* values (18.8 and 20.2, respectively), followed by SM (16.0 and 17.3), BF (15.5 and 16.4), and LD (12.0 and 13.1) muscles. The content of total collagen was higher (P<0.001) on BF and SM muscles (1.51 and 1.45 mg/g, respectively), and lower on LD and PM muscles (0.96 and 1.01). The soluble fraction of collagen did not differ among muscles, varying between 0.16 (LD) and 0.21 mg/g (SM). These results indicate that there are important differences between muscles and that these differences will have impact on the sensorial quality (e.g. colour and texture/toughness). Thus, the PM muscle was the most reddish/attractive muscle, with lower collagen content, and the LD muscle had a pale colour, the lower collagen content and the higher content of intramuscular fat. These parameters agree with the higher commercial value of the LD muscle, related with higher sensorial properties (toughness and juiciness).**

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***Index Terms*—Alentejano pig, meat quality, muscle type**

I. Introduction

The Alentejano (AL) pig is an autochthonous breed reared in the Alentejo region of Portugal. This breed is characterised by slow growth rates and is reared in a traditional production system where animals are slaughtered at 12–14 months, with 150–160 kg live weight (LW). Normally, 2 or 3 months before slaughter, AL pigs are fed in "Montanheira", with access to acorn and grass from October to February. This system produces a heavy and fat carcass, well suited for the production of dry-cured meat products, mainly dry-sausages and hams. Nowadays, the producers are increasingly using an alternative production system, to provide fresh meat for human consumption during all the year. Therefore, meat from pig production systems in which pigs are free-range reared, and fed on natural feeds with no growth promoters and antibiotics, begins to be an important field of interest [1]. However, the information about the characteristics of fresh meat obtained from free-range reared AL pigs is limited. The carcass comprises several meat cuts with different muscle composition, and muscles are comprised of different types of fibre (aW, aR, and bR) with different contractile and metabolic properties. Red muscle fibres (type 1) are rich in myoglobin content and have a high oxidative and low glycolytic metabolic capacity, whereas intermediate (type 2a) and white (type 2b) fibres are fast twitching with low oxidative and high glycolytic metabolic activity [2]. The relative proportion of the three types of fibres on each muscle largely determines its technological and sensory properties such as taste, juiciness or rate of lipid and myoglobin oxidation [3]. Depending on the types of fibre that constitute a muscle, it has a different trend to intramuscular fat deposition, a different heme pigment concentration, and its phospholipids and fatty acids composition varies [1]. Meats are more tasty and juicy, and total heme pigments and lipids oxidise faster in oxidative muscles than in glycolytic ones. This contributes to different textural properties [4] and to the formation of aromatic compounds, and thus the appearance of rancidity and warmed-over flavour during storage [5].

This study was carried out to characterise the