

Effects of body weight on some blood plasma parameters of pigs from the Alentejano breed

J.M. Martins^{*,**}, J. Neves^{**}, A. Freitas^{**} and J. Nunes^{**}

^{*}Laboratório de Metabolismo Animal, ICAM/Universidade de Évora,
Apartado 94, 7002-554 Évora, Portugal

^{**}Departamento de Zootecnia, Universidade de Évora, Apartado 94, 7002-554 Évora, Portugal

SUMMARY – This work has evaluated the influence of body weight (BW) on some plasma parameters of Alentejano pigs. Thirty castrated Alentejano pigs (~35 kg BW) were allocated in individual pens and fed a commercial diet (0.85 x *ad libitum*). The pigs were slaughtered in groups (n=5) with an average BW of 42.2, 70.9, 80.2, 90.1, 100.5, and 110.2 kg. Plasma samples obtained at slaughter were analysed. Glucose and triacylglycerol levels decreased ($P \leq 0.05$) with increasing BW, suggesting that during growth Alentejano pigs increased the use of glucose and triacylglycerols as energy and substrate for fat synthesis and deposition. Total cholesterol increased ($P \leq 0.05$) with BW, due to an increase ($P \leq 0.05$) in the low-density lipoprotein (LDL) cholesterol level, following the trends reported in ageing mammals. The Alentejano pig, with a high lipogenic activity, could be a valuable model for studies of the cholesterol metabolism.

Keywords: Alentejano pig, body weight, blood plasma parameters, glucose, lipids, lipoproteins.

RESUME – "Effets du poids corporel sur quelques paramètres plasmatiques chez le porc Alentejano". Ce travail a évalué l'influence du poids corporel sur quelques paramètres plasmatiques chez le porc Alentejano. Trente porcs Alentejano (~35 kg) castrés ont été placés en cages individuelles et nourris avec un régime commercial (0,85 x *ad libitum*). Les porcs ont été abattus en groupes (n=5) à un poids moyen de 42,2, 70,9, 80,2, 90,1, 100,5 et 110,2 kg. Des échantillons de plasma obtenus à l'abattage ont été analysés. La concentration en glucose et triglycérides a diminué ($P \leq 0,05$) avec l'augmentation du poids, en suggérant que les porcs Alentejano avaient augmenté l'emploi de ces composés comme source d'énergie et comme substrat pour la synthèse des tissus adipeux. Le cholestérol total a augmenté ($P \leq 0,05$) avec le poids, par l'augmentation du cholestérol des LDL, suivant la tendance observée chez les mammifères vieillissants. Le porc Alentejano, avec une capacité adipogénique élevée, pourrait être un modèle valable pour des études du métabolisme du cholestérol.

Mots-clés : Porc Alentejano, poids corporel, paramètres plasmatiques, glucose, lipides, lipoprotéines.

Introduction

The Alentejano pig is an autochthonous breed reared in the south of Portugal. This breed is different from the highly selected lean European breeds, presenting slower growth rates and higher lipogenic activity at an early stage of development (Neves *et al.*, 1996). Traditionally reared outdoors and eating mainly grass and acorns during their finishing period, the Alentejano pig is nowadays increasingly reared in semi-extensive systems and fattened with commercial diets to provide fresh meat for human consumption.

Data concerning the blood parameters of the Alentejano pig are scarce. Although a few parameters have been measured in Alentejano piglets (Freire *et al.*, 1996 and 1998), there is no information regarding the concentration of the most common blood parameters during the growing-finishing period of the Alentejano pig. Such information is required to provide an adequate frame of reference for further physiological work with this breed. Some blood parameters may also be used to predict disease resistance, health status, meat quality, or performance traits (Lingaas *et al.*, 1992). Blood cholesterol levels, for instance, were positively correlated with fat deposition and considered to give a more valuable indication of body composition than performance data alone (Taylor *et al.*, 1992).

The present study aimed to investigate the evolution of several blood plasma parameters of sexually neutralised male and female Alentejano pigs during the growing-finishing period, as a contribution to the knowledge of the physiology of this breed.