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VII Encontro de Estudantes de Doutoramento em **Ambiente e Agricultura**
VII PhD Students Meeting in **Environment and Agriculture**

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Book of abstracts

Backfat transcriptome of castrated and intact Alentejano pigs fed commercial and fibre-rich experimental diets

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This work, included in the framework of the ECO-PIG Project, aims to reveal the differences in the backfat transcriptome of 30 male Alentejano pigs (AL) raised outdoors and divided equally into surgically castrated (**C**), intact (**I**) and intact pigs consuming an experimental diet (**IE**). These animals were fed *ad libitum* with commercial diets from 40 to 130 kg body weight. From 130 to 160 kg (slaughter weight) **C** and **I** were fed with a commercial diet, while **IE** ate an isoproteic and isoenergetic experimental diet with the addition of locally produced ingredients and agro-industrial by-products. These were chosen to provide enough insoluble dietary fibre and beet pulp to reduce boar taint in intact pigs as mentioned in the bibliography. Backfat samples were collected in the slaughterhouse and stored at -80 °C. RNA was extracted from these samples using Purelink RNA mini-kit and the RNA-seq technique was performed with the Illumina protocol. The results were organized in three comparisons (**I** vs. **C**, **IE** vs. **C** and **IE** vs. **I**). Major differences between groups were found in **I** vs. **C** comparison, with a total of 2726 differently expressed genes (DEGs), 1170 upregulated in **I** and 1556 upregulated in **C**. The fewest differences were found in **IE** vs. **I** group with only 28 DEGs, 16 upregulated in **IE** and 12 upregulated in **I**. In **IE** vs. **C** comparison, 1639 DEGs were found, 724 upregulated in **IE** and 915 upregulated in **C**. Overall, genes overexpressed in **I** and **IE** are related to muscle development, and collagen metabolism, while the ones overexpressed in **C** are involved in lipid and fatty acid metabolism. These results are in line with those obtained by the functional analyses, in which the intact animals (**I** and **IE**) had differences when compared to **C** in general development pathways, lipid metabolism, fatty acid biosynthesis and catabolic processes. Meanwhile, there were not many significant pathways identified between the two intact groups (**I** vs. **IE**). From these results, it can be stated that the main differences in the backfat transcriptome are due to the surgical removal of the testis, and that the experimental diet has a marginal effect.

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