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## **Book of abstracts**

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## Differentially expressed genes involved in lipid metabolism in the muscle tissue of Alentejano and Bísaro pig breeds

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The Alentejano (AL) and Bísaro (BI) pigs stand as the predominant local breeds raised in Portugal. AL pigs are characterized by lower growth rates and precocious and higher lipid deposition, particularly of monounsaturated fatty acids, when compared to BI pigs. Lipid and fatty acids composition of meat and meat products are important features for consumers health, and gene expression is a decisive process determining fatty acid composition and deposition rates in the muscle tissue of every mammal. This study investigates the transcriptomic fundamentals associated to the phenotypical differences through a real-time qPCR approach on a set of candidate genes responsible for regulating lipid metabolism processes. *Longissimus lumborum* samples were collected at slaughter from five animals of each breed raised under similar conditions until ~150kg BW. Total RNA was extracted, and target cDNA was amplified to estimate expression levels when compared to endogenous control genes. Several lipogenic related genes were found to be overexpressed in the AL breed including *ACLY* (log<sub>2</sub>FC=0.50, p<0.05), *ELOVL6* (log<sub>2</sub>FC=0.67, p<0.01), *ME1* (log<sub>2</sub>FC=0.78, p<0.05), while other major lipogenic markers, such as *FASN* (log<sub>2</sub>FC=0.45, p=0.09) and *ACACA* (log<sub>2</sub>FC=0.28, p=0.17) did not attain statistical significance, but indicate a tendency towards AL. The gene coding for the central appetite regulation hormone (LEP) was detected as significantly overexpressed in AL (log<sub>2</sub>FC=1.60, p<0.05), which may suggest the occurrence of leptin resistance in this breed, comparable to what happens with the genetically similar Iberian pig, failing to decrease feeding and increase stored energy expenditure. Similarly, adiponectin resistance is predicted to have developed in AL pigs since higher *ADIPOQ* levels (log<sub>2</sub>FC=0.90, p<0.01) are associated with leaner animals due to the activation of fatty acid oxidation pathways by this regulator. These results agree with the previously described high intramuscular fat content profile of the AL breed, essential in enhancing the overall sensory quality of its meat and meat products.

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