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Comparative study of leptin and leptin receptor gene expression in different swine breeds

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ABSTRACT. Leptin is an important regulator of appetite, energy metabolism, and reproduction and is mainly synthesized in the adipocytes and then secreted into the bloodstream. The leptin receptor was classified as type I cytokine receptor due to its structural homology with IL-6 receptors and the signaling pathways in which they are both involved. The aim of our study is to comparatively assess the gene expression levels of leptin (*lep*) and leptin receptor (*lepr*) in different swine breeds specialized either in meat production (Duroc, Belgian Landrace, Large White, Synthetic Lines LS-345, and LSP-2000) or fat production (Mangalitsa) in order to correlate them with morphological and productivity characteristics. Additionally, *lepr* pattern of expression was evaluated comparatively between different tissue types in the Mangalitsa breed. Our results revealed high expression of the *lep* gene in Mangalitsa compared to those of all the other breeds, while for the *lepr* gene, average/medium levels were registered in Mangalitsa and increased pattern of expression was found in the synthetic lines LS-345 and LSP-2000. Regarding the comparative analysis of *lepr* gene expression in various tissues in the Mangalitsa breed, elevated levels were found in the liver and kidney, while the lowest expression was identified in the brain and muscles. Our results suggest that the

Mangalitsa population exhibits leptin resistance, which might be correlated with atypical morpho-productive characteristics for this breed, such as below-average prolificacy and a strong tendency to accumulate fat.

Key words: Swine; Leptin; Leptin receptor; Gene expression

