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UNCOUPLING PROTEIN 1 EXPRESSION IN LIPOMA TISSUE AND LIPOMA-DERIVED STEM CELLS

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Mechanisms and factors that lead to the formation of lipomas, benign tumors of adipose tissue, are still insufficiently elucidated. Mesenchymal stem cells (MSCs) isolated from lipomas have some similar characteristics to MSCs isolated from white adipose tissue but differ at the molecular level and in their differentiation potential. Considering histological appearance of lipomas, it is not clear to what extent lipomas share common characteristics with other adipose tissue type, brown adipose tissue. Therefore, the aim of this study was to examine the level of uncoupling protein 1 (UCP1), a marker of brown adipose tissue, expression in lipoma tissue as well as in MSCs isolated from lipomas, i.e. lipoma-derived mesenchymal stem cells (LDSCs). LDSCs were grown in standard cell culture conditions and subjected to adipogenic differentiation. UCP1 expression was examined at the RNA level, using Real-Time PCR, and at the protein level, using immunohistochemistry and immunogold staining. Expression of UCP1 in lipoma tissue and LDSCs was compared with the expression of UCP1 in subcutaneous white adipose tissue (scWAT) and adipose-derived mesenchymal stem cells (ADSCs) grown and differentiated in the same cell culture conditions. Differences were observed in UCP1 expression at both RNA and protein levels in lipomas compared to scWAT directing the future research towards the potential of browning mechanisms of adipose tissue involved in lipoma tissue formation.

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