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P68- Comparative Expression of CD29 in Equine Bone Marrow and Adipose-Derived Mesenchymal Stem Cells

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Abstract

Background: Bone marrow and adipose tissue are the main sources of mesenchymal stem cells (MSCs) for cell-based therapy of musculoskeletal disorders. It is important to evaluate specific characteristics of these cells and choose the best source of MSCs before use in clinical applications. One of the best methods to compare cells with different sources is gene expression analysis by quantitative real time polymerase chain reaction (qRT-PCR).In this study, we evaluated the expression level ofCD29 as a specific marker of equine MSCs in bone marrow (BM) and adipose-derived mesenchymal stem cells (AT-MSCs). **Materials and Methods:** MSCs from adipose tissue and bone marrow of three mares were isolated, characterized and cultured until passage 3 (P3). Total RNA of P3 cells was extracted and purity and quantity of RNA were assessed. cDNA was synthesized and qRT-PCR was performed using CD29 primers in triplicate. As the expression of MHC-1 was the same in the cells of both groups, it was used as reference gene to normalize data. Data were analysed using student's *t*-test. **Results:** Our results indicated that the expression of CD29 in AT-MSCs was significantly higher than BM-MSCs ($p < 0.009$). **Conclusion:** Based on these results, it was revealed that inspite of many biological similarities between equine AT-MSCs and BM-MSCs they have some different characteristics such as CD29 expression (an adhesion molecule).The higher expression of CD29 may suggest that homing in AT-MSCs is better than BM-MSCs.

Keywords: CD29, Mesenchymal Stem Cells, Equine, qRT-PCR