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Mesenchymal stem cells isolated from a novel equine tissue exhibit embryonic molecular markers and adipogenic differentiation potential

Jane Marie Isquith, Kelly Shaw, Karen Shaw, Daniel Peterson and Matthew Burd

California Polytechnic State University, San Luis Obispo, CA

ABSTRACT

Mesenchymal stem cells (MSC) have been isolated from equine tissues, most notably adipose and bone marrow. On the basis of ability for self-renewal, molecular marker expression and differentiation potential, we characterized MSCs isolated from a tissue not yet explored in the equine. After isolation, MSCs were maintained in culture for 25 passages before senescence was observed. Reverse transcription-PCR revealed embryonic transcription factor Oct4 mRNA, as well as mRNA for fucosyltransferase 4 and ST3 B-galactoside α 2,3 sialyltransferase 2, two enzymes responsible for synthesis of embryonic surface markers SSEA1 and SSEA4, respectively. Treatment with insulin, dexamethasone, indomethacin and isobutylmethylxanthine led to increased oil red O staining ($P < 0.05$) indicating successful adipogenic differentiation. These data indicate the stem-like nature of these cells and their successful isolation from this tissue source. However, further characterization is needed to determine their full potential. Partially funded by College of Agriculture, Food and Environmental Science, Cal Poly San Luis Obispo