Effects of human placental serum on proliferation and morphology of human adipose tissue-derived stem cells.

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Abstract

Media used for tissue culture may have significant effects on the growth and morphology of the adipose tissue-derived stem cells (ADSCs). As fetal bovine serum (FBS) may induce an immunological reaction and health risks, this study was designed to evaluate and compare the effects of human placental serum (HPS) on the proliferation and morphology of hADSCs. We cultured hADSCs for at least three passages in four different culture media containing either FBS, HPS, autologous serum (AS) or human allogeneic serum (HAS). Morphological and immunophenotypic characteristics, as well as proliferation rates of the hADSCs were determined. The rates of proliferation of hADSCs seemed as follows: AS≥HPS>HAS>>FBS. Morphologically, hADSCs isolated and expanded in medium containing HPS were similar to those grown in medium containing AS, whereas the morphology of cells cultured in human sera was different in comparison with FBS-ADSCs cultures. The immunophenotypic markers of hADSCs grown up in medium containing placental serum such as CD44+, CD90+ and CD105+, were similar to hADSCs grown up in media containing other sera. These results indicate that medium enriched with HPS provided a better microenvironment for hADSCs in comparison with medium enriched with commercially available FBS, and other human sera.

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