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## Human serum as an alternative to fetal bovine serum in adipose tissue-derived stromal cells cultures

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Multiple clinical trials are underway to evaluate the use of adipose tissue-derived stromal cells (hASC) for regenerative medicine. Nevertheless, prior to its clinical application, hASC need ex vivo expansion in compliance with GMP guidelines in order to obtain a suitable amount of cells. Fetal bovine serum (FBS) is the most widely used serum in standard culture conditions, but the use of animal origin components bears disadvantages and is not an option in clinical cell therapy due to several safety issues. So our aim was to show the effectiveness of pooled allogeneic human serum (aHS) as a supplement for hASC culturing. In this study, the hASC were expanded in DMEM supplemented with aHS and the immunophenotype and differentiation potential of the cells were evaluated. The first difference observed between FBS and aHS cultures was that hASC in aHS proliferated markedly faster than in FBS, which was confirmed by Ki-67 expression, the cumulative population doubling, and by a growth curve. To better understand this hASC expansion pattern, the transcription factors C-myc and C-fos as well as mRNA levels of hTERT, and pluripotency genes (OCT-4 and NANOG) were assessed. No significant expression was observed and the hASC cultured in aHS underwent replicative senescence with normal karyotype. These cells assayed were not able to generate a teratoma. Therefore, this study confirms and extends the benefits of rapid expansion of hASC in culture media supplemented with aHS, with the cells maintaining their phenotype and with no spontaneous cell transformation.

### Biography

Ana Cláudia Chagas de Paula at age of 26 years is at the end of her PhD at Laboratory of Cellular and Molecular Immunology of Federal University of Minas Gerais (Brazil). Her areas of research interest are in cell biology and immunological approaches for cell culture, mainly stem cells, as well as development of novel tissue engineering strategies for bone replacement. She has published more than 5 papers in reputed journals in the last 2 years.

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