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The role of stem cells in tissue engineering and regenerative medicine is evolving rapidly, namely the use of mesenchymal stem cells (MSCs) due to their potentially immune privilege. These cells can be isolated from different sources such as bone marrow, adipose tissue, umbilical cord and more recently amniotic fluid. Although the amniotic fluid cells have been used for prenatal diagnosis since 1950s in a well established routine technique, little is known about the origin and properties of these cells. In this study, we aimed at developing a method of isolation and expansion of purified cultures of adult stem cells from amniotic fluid to be used as a tool for regenerative medicine. We isolated hAFSCs (Human Amniotic Fluid Stem Cells) from day 6 supernatant of the cultures of amniotic fluid obtained from amniocentesis. The cell pellet was reseeded in expansion medium and cultured until confluence. The effect of cell density plating, basic fibroblast growth factor (bFGF) and foetal bovine serum (FBS) concentrations, in the culture medium were tested and the proliferative potential was evaluated by cell counts at various time points. The osteogenic and chondrogenic differentiative potential were also evaluated. Parameters as cell surface markers of ''stemness'', telomerase activity and stem cells transcripts expression of specific lineages were evaluated by flow cytometry and RT-PCR techniques. With this work we intended to contribute to unfold the potential of stem cells populations from amniotic fluid by decreasing FBS concentration, number of cell-passages and culture time needed to obtain a homogeneous stem cell culture.

(P 121) Development of Enhanced Low Serum Culture Strategies for Human Amniotic Fluid Stem Cells

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