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ORIGINAL ARTICLE**Autologous serum supplement favours in vitro regenerative paracrine factors synthesis**

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Abstract

Objectives

Foetal bovine serum (FBS) is often the serum supplement of choice for in vitro human cell culture. This study compares the effect of FBS and autologous human serum (AuHS) supplement in human peripheral blood mononuclear cell (PBMC) culture to prepare secretome.

Materials and methods

The PBMC ($n = 7$) were cultured either in RPMI-1640 containing L-glutamine and 50 units/ml Penicillin-Streptomycin (BM) or in BM with either AuHS or FBS. Viability, proliferation and differentiation of PBMC were evaluated. Paracrine factors present in the secretomes ($n = 6$) were analysed using ProcartaPlex Human Cytokine panel (17 plex). Ingenuity Pathway Analysis (IPA) was performed to predict activation or inhibition of biological functions related to tissue regeneration.

Results

The viability of PBMC that were cultured with FBS supplement was significantly reduced at 96 h compared to those at 0 and 24 h ($P < .05$). While the reduction of the viability of PBMC that were cultured with AuHS supplement was not significantly different compared to those at 0 and 24 h. The FBS secretomes prepared at 24 h was found to contain significantly higher amount of EGF ($P < .05$) compared to that in AuHS or BM secretome. The AuHS secretomes contained significantly higher amount of HGF at 24 ($P < .05$) and 96 h ($P < .01$), and VEGF-A at 24 h ($P < .05$) compared to those in the FBS secretomes. SDF-1 was not detected in the FBS secretomes prepared at either 24 or 96 hours. Double immunocytochemical staining revealed a marked increase in co-localization of SDF-1 and its receptor in PBMC that were cultured with AuHS supplement compared to that cultured with FBS supplement.

Conclusion

In secretome preparation, AuHS supplement favours synthesis of paracrine factors that are needed for regenerative therapy.

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