

Myogenic potential of human peripheral blood cells

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In the search of cell types useful to treat skeletal muscle dysfunctions, this work dealt with isolation, characterization and evaluation of myogenic potential of adherent fibroblastic cells from human peripheral blood (hPBCs).

hPBCs were obtained by Ficoll density gradient separation and characterized by SEM, RT-PCR, FACS, Western blot, and immunocytochemistry. Myogenic induction was carried out using a differentiation medium containing insulin-like growth factor-1 and ascorbic acid.

hPBCs showed a mesenchymal stem cell profile being CD73+/CD90+/CD105+ and possessed a doubling population time of 48 hours over 31 passages. After induction with myogenic factors, these cells formed multi-nucleated elements and expressed myogenic markers. At one week from injection in the rat tibialis anterior muscle, previously damaged with bupivacaine [1], transplanted cells were detectable in the muscle and differentiated into skeletal muscle cells, as demonstrated by immunofluorescence.

Taken together, our results show that hPBCs possess myogenic potential both in vitro and in vivo and may represent a promising tool for the treatment of skeletal muscle disorders.

References

- [1] Conconi et al. (2006) CD105(+) cells from Wharton's jelly show in vitro and in vivo myogenic differentiative potential. *Int J Mol Med* 18(6): 1089-1096.

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