

عنوان مقاله:

Establishment and Characterization of Melanocyte Stem Cells from Hair Follicle Bulge of Vitiligo Patients

محل انتشار:

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خلاصه مقاله:

Introduction: Melanocyte stem cells (MelSCs) might offer potential candidates for cell-based therapies against pigmentary disorders, such as vitiligo. However, the properties of MelSCs and their involvement in disease pathology are yet to be explored. In this study, MelSCs derived from the lesional (V-MelSCs) and unaffected regions of vitiligo patients (NV-MelSCs) were established, and compared their cellular, biological and molecular characteristics to that of MelSCs isolated from the skin of normal, unaffected individuals as control (C-MelSCs). **Materials and Methods:** MelSCs were isolated and expanded in vitro by explant culture. Growth kinetics, metabolic activity, cell viability, colony-forming ability, senescence activity, and cell cycle status of MelSCs were analyzed. Later, MelSCs were evaluated for the expression of marker genes, such as CD34, Pax3, Sox10, sFRP4, MITF, TYRP1, DCT, TYR, TGFB, and c-KIT. **Results:** MelSCs derived from vitiligo patients had lower proliferation and metabolic activity despite showing unaltered morphological features. Significantly ($P < 0.05$) decreased number of viable cells was observed in C-MelSCs and V-MelSCs in passage 3 (P3) compared to P1. The colonyforming assay revealed homogeneous distribution, but slightly larger and dense colonies in C-MelSCs compared to NV-MelSCs and V-MelSCs. All MelSCs showed a higher percentage in the G0/G1 phase of the cell cycle with low senescence activity. Finally, MelSCs from the skin of vitiligo exhibited lower expression levels of selected marker genes implicated in melanocyte development. **Conclusions:** MelSCs residing in hair follicle bulge of vitiligo patients possess marginally altered cellular, potency and biological characteristics. These findings underscore the challenges in establishing repigmentation therapy for vitiligo using autologous transplantation of MelSCs.

کلمات کلیدی:

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