

# CYTOTHERAPY

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## MESENCHYMAL STROMAL CELL-LIKE CHARACTERISTICS OF CORNEAL KERATOCYTES

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**Background:** The unique potential of mesenchymal stromal cells (MSC) has generated much research interest recently, particularly in exploring the regenerative nature of these cells. Previously, MSC were thought to be found only in the BM. However, further studies have shown that MSC can also be isolated from umbilical cord blood, adipose tissue and amniotic fluid. In this study, we explored the possibility of MSC residing in the cornea.

**Methods:** Human cornea tissues were chopped to fine pieces and cultured in DMEM supplemented with 10% FBS. After a few days, the crude pieces of cornea were removed. Isolated keratocytes that were adherent to tissue culture flasks were grown until confluency before being passaged further. The immunophenotype was evaluated by flow cytometry. Assays were performed to differentiate cultured cells into adipocytes and osteocytes.

**Results:** Isolated corneal keratocytes exhibited a fibroblastoid morphology and expressed CD13, CD29, CD44, CD56, CD73, CD90, CD105 and CD133, but were negative for HLA-DR, CD34, CD117 and CD45. These properties are similar to those of BM-MSC (BM-MSC). In addition, corneal keratocytes were able to differentiate into adipocytes and osteocytes.

**Discussion:** Our results indicate that corneal keratocytes have MSC-like properties similar to those of BM-MSC. This study opens up the possibility of using BM-MSC in corneal tissue engineering and regeneration. Furthermore, discarded corneal tissue can also be used to generate MSC for tissue engineering purposes.