GENETICS AND GENODERMATOSES

A BETTER METHOD TO CULTIVATE HUMAN SKIN-DERIVED PRECURSORS

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Introduction: Dermal stem cells known as skin-derived precursors (SKPs) are cloned spherical in shape. The main cells in the dermis are fibroblasts (FBs). Some fibroblasts also could differentiate into other cell types. It has been suggested that SKPs are more primitive and can be differentiated into fibroblasts with the induction of serum or connective tissue factors. Although mouse and young children SKPs have been cultivated before, adult SKPs cultivation is very difficult, which limits the further clinical application of SKPs.

Objective: We try to find a better access to culture a large number of stem cells from the dermis.

Materials and Methods: Human fibroblasts (hFBs) were cultured in vitro with FBs medium, and then transferred into SKPs medium to obtain human transformed skin-derived precursors (htSKPs). The number and shape of cells were observed under a microscope. The expression of Nestin, Vimentin and Sox2 in htSKPs were detected by immunofluorescence staining. The htSKPs were induced into adipogenic and osteogenic differentiation and were stained with oil red and alizarin red respectively.

Results: The hFBs can well grow after 5 times of passages, each generation of hFBs can be seeded into SKPs medium to form cloned spheres within 1 week. The shape and size of SKPs and tSKPs spheres are similar. The htSKPs expressed Nestin, Vimentin, Sox2, and could be induced into adipogenic and osteogenic differentiation.

Conclusions: Mouse and human dermal fibroblasts could form tSKPs spheres. The shape, size and marker of tSKPs are similar with those of SKPs. The tSKPs also have multiple differentiation potential.