

Abstract

Keratinocytes are the most abundant skin cells found in epidermis. They are divided into proliferative basal stem cells, which are in close contact with basement membrane and suprabasal differentiating cells. Basal keratinocytes express K5 and K14 keratins and give rise to differentiating layers via delamination or asymmetric division. The firstly formed layer is stratum spinosum that expresses keratins K1 and K10 and involucrin, and, subsequently, it passes into the stratum granulosum, in which cells express loricrin and profilagrin. The last layer of epidermis is the stratum corneum formed by corneocytes that finally desquamate. Keratinocytes participate in the process of skin regeneration and can be isolated and cultivated. Their cultivation can be affected by various factors, such as selection of suitable material (nanofibers/gels) and suitable culture media, which can be enriched with growth factors, platelet lysate, vitamins and other substances. When culturing them, it also depends on whether the cells are entirely immersed in medium or growing on liquid/air interface. To approximate *in vivo* conditions and to study interaction between cell populations, keratinocytes are often cultured in co-cultures with different cells such as fibroblasts, endothelial cells, monocytes and others. Keratinocytes cultured *in vitro* find excellent application in tissue engineering, in the creation of skin substitutes, and consequently in medicine, where they significantly increase the effectiveness of wound healing.

Key words: keratinocytes, differentiation, wound healing, molecular markers, epidermis