

Colonization properties of different collagen sponges in skin repair

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Wound healing is a natural process that occurs in response to tissue injury [1]. In the skin, the entire process of wound healing is composed by different phases (haemostasis, inflammation, proliferation, and maturation) that could repair this complex organ consisting of the epidermis, dermis and appendages. Different collagenous sponges are used to help the regeneration of damaged skin [2]. These biomaterials are mainly formed by highly-organized natural collagen fibres, that are biocompatible, biodegradable, non-toxic and with high tensile strength [2]. In this study, we analysed the association of a keratinocyte cell line (HACAT cells) with collagenous biomaterials as an *in vitro* model for skin wound repair. In order to study the ability of this constructs to be considered an ideal regeneration template, HACAT cells were seeded on different collagenous scaffolds and cultivated for 7, 14 and 28 days in an "air-liquid interface" to promote keratinocyte differentiation. Gene expression analysis were performed with qRT-PCR on keratin genes. Moreover, histological analysis (H/E and MTT test) were performed to confirm the colonization and the proper distribution and proliferation of seeded cells. Results show that HACAT cells do proliferate and colonize in similar manner collagenous scaffolds and they differentiate to the horny layer more quickly than on plastic.

References

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Keywords

Wound healing, skin, collagenous sponges, HACAT cells, haematoxylin/eosin staining, gene expression analysis