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Skin Substitutes for Wound Healing: An Advanced Formulation

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Abstract : Tissue engineering aims to develop advanced medical devices to restore normal functions of damaged tissue. These devices, even more effective than conventional methods, are called skin substitutes and are configured as drugs to be applied to the damaged area, to heal extensive and deep wounds which could otherwise lead to chronic wounds lasting over time. Among the variety of commercially available skin substitutes, those that have proven to be most effective are those consisting of a bilayer scaffold. The aim of our research was to design a skin substitute which can promote cell proliferation, cell migration and angiogenesis, and which can guarantee timely closure of the wound with satisfactory aesthetic results, in order to avoid the patient excessive pain, risk of contracting infections and long-term hospitalization. The product was tested in vitro using the Scratch Assay. The assay was carried out both on the matrix modified with hyaluronic acid and on the matrix based only on collagen. In both cases, after 48 hours of exposure the wound scratch was almost completely closed in treated cells compared to untreated control.

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