SKIN is the largest organ of the body and is a protect barrier between the human body and the surrounding environment. Loss of large part of skin, related to illness or injury, would not only affect the appearance of the patient, but also can lead to infection and even causing death\textsuperscript{1}. Thus, the necessity of skin substitutes for wound healing has increased skin tissue engineering research and promoted development of biomimetic skin scaffolds that help to regenerate large points of damaged skin. Collagen has been widely used to fabricate scaffolds due to its high biocompatibility, low antigenic response and because it naturally contains cell adhesion motives that improve cell-scaffold interactions. At least, 29 different types of collagen have been identified. Type I collagen is the most common type of collagen and it is the major protein of all connective tissue, such as bone, tendon, cartilage and skin\textsuperscript{2,3}. Despite the huge efforts and developments, the uses of collagen for tissue engineering applications are currently limited by its high susceptibility to enzymatic degradation and low thermo stability in vivo.

To improve physical properties and enhance resistance to enzymatic attack, it is necessary to stabilize the collagen structure. This is usually done by the introduction of cross-links. The most commonly used cross-linking method for processing collagen is chemical cross-linking with a variety of agents. 1-Ethyl-3(3-dimethyl-aminopropyl-1-carbodiimide) (EDC) has become a popular cross linking reagent for proteins because it is a member of the zero-length class of cross-linkers\textsuperscript{4}.

Collagen type I scaffolds were prepared via freeze-drying and cross-linked with EDC. Biological characteristics of the cross-linked scaffolds were observed. The effect of the crosslinking method was evaluated by SEM, DSC and swelling test. The biostability of EDC cross-linked scaffolds was evaluated by exposing the scaffolds to collagenase solution. The viability and proliferation of human fibroblasts seeded in the scaffolds was quantified using Alamar Blue reagent. The morphology of cells attached to the scaffolds was observed by Scanning Electron Microscopy.

**Keywords:** collagen, scaffolds, characterization

**References:**


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