

DRESSINGS BASED ON THE ASSOCIATION OF SERICIN AND BIOACTIVE POLYMERS FOR THE TREATMENT OF SKIN ULCERS

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Purpose: There are still unmet needs in the treatment of epithelial and skin lesions, in particular the treatment of chronic wounds is progressively evolving from a symptomatic palliative approach, based on the use of medical devices and/or traditional drug products, towards a more modern approach, so-called reparative medicine. Within this frame platelet lysate (PL), a hemoderivative obtained from platelet rich plasma and containing a pool of growth factors, has demonstrated to accelerate healing process. It is also recognized that the efficacy of GFs critically depends on the way they are made available to the injured tissue. Therefore the development of suitable therapeutic vehicles is of paramount importance for allowing growth factors to be released according to the repairing requirements. Recently Sericin (Ser), a silk protein, was recognised for its favourable proliferative and antioxidant properties. For such reasons the aim of the present work was the development of dressings based on the association of Ser with different biopolymers, such as chitosan (CS), alginate (SA) or pectin (PEC), known for their bioactive properties.

Methods: Dressings were obtained by freeze-drying mixtures of aqueous solution of CS (high and low MW, Giusto Faravelli, Milan, I) or SA (Sigma Chimica, Milan, I) or PEC (Giusto Faravelli, Milan, I), Ser (Sigma-Aldrich, Milan, I) and glycine (Gly, employed as crio-protectant agent) (Sigma-Aldrich, I). Dressings obtained by such mixtures were characterized for mechanical resistance, hydration propensity and viscous and viscoelasticity properties upon hydration. Dressings were loaded with PL and were investigated *in vitro* for proliferation properties on normal human dermal fibroblast cell line (bHNDF, Promocell, G).

Results: Dressings developed show suitable mechanical and viscoelastic properties and are able to absorb saline solution, medium mimicking wound exudate. In particular dressing prepared with pectin show the best elastic properties. All dressings are able to absorb PL and are able to improve cell proliferation properties, due to the release of the PL bioactive substances.

Conclusions: The dressings developed are promising candidates for the delivery of PL in skin ulcers.