

**Abstract :**

Burn lesions are frequently occurring injuries that exhibit poor healing ability. Scaffolds play a critical role in the reconstruction of damaged living tissue, and those produced using biopolymers, such as gelatin and chitosan, are biocompatible and have adequate functional properties. Mesenchymal stem cells (MSC) and fibroblasts are an excellent tool for studying the behavior of this kind of biomaterials and their ability to guide the growth and tissues repair. The aim of this study was the synthesis of freeze-dried scaffolds based on gelatin and chitosan added with aloe vera and snail mucus. The microstructure and in vitro cellular interaction with scaffolds were determined through SEM. Cell viability of cell seeded scaffolds was determined through the MTT assay. Wound healing in vivo studies were made by contact with incandescent metallic bar on dorsal female mice, then the scaffolds were subcutaneously implanted. For production of porous scaffolds, gelatin (G), chitosan (CH), aloe vera (A) and snail mucus (S) suspensions was prepared. The scaffold forming suspensions (SFS) were frozen at  $-80^{\circ}\text{C}$ , prior to freeze-drying at  $-58^{\circ}\text{C}$  for 18h. The resulting sponge-like material was crosslinked and freeze-dried again. Gelatin-based scaffolds showed what appeared to be a highly porous sponge displaying interconnected porosity and homogeneous pore diameters, as well as pore wall thickness. Important microstructural changes were observed in the scaffolds as a function of additives. Scanning electron micrographs revealed that the cells appeared to attach and spread well in all scaffolds, forming multiple protrusions and cellular aggregates that gradually increased in size. MTT assay showed that fibroblasts proliferated more rapidly on the scaffolds containing aloe vera and the mixture of aloe vera and snail mucus. The scaffold was observed to be biocompatible on subcutaneous implantation in mice model which was supported by scaffold integration with tissue and presence of blood vessels in histological studies.

**Biography :**

Daniel López-Angulo has completed his PhD at the age of 35 years from University of Santiago de Chile. He has experience in the study of physical properties of biopolymer's network, focusing on quantification and measurement of structural relaxation phenomenon in glassy state materials. Currently, he is postdoctoral researcher at Sao Paulo University, Brazil, he is developing a project related to synthesis of porous scaffolds based gelatin and chitosan for enhance cell proliferation and tissue regeneration for biomedical applications. He has published more than 10 papers in reputed journals.

## References (With Hyperlink)

1. [State diagram of salmon \(\*Salmo salar\*\) gelatin films](#)
  2. [Characterization of a Gelatin/Chitosan/Hyaluronan scaffold-polymer](#)
  3. [Edible film with antioxidant capacity based on salmon gelatin and boldine](#)
  4. [Characterization of gelatin/chitosan scaffold blended with aloe vera and snail mucus for biomedical purpose](#)
  5. [Characterization of edible active coating based on alginate–thyme oil–propionic acid for the preservation of fresh chicken breast fillets](#)
  6. [The effect of processing parameters and solid concentration on the microstructure and pore architecture of gelatin-chitosan scaffolds produced by freeze-drying](#)
  7. [Assessment of gelatin–chitosan interactions in films by a chemometrics approach](#)
  8. [Structural relaxation of salmon gelatin films in the glassy state](#)
- [Structural relaxation of salmon gelatin films in the glassy state](#)

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