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ORAL

MANUFACTURING BIOLOGICAL MEMBRANE FROM BOVINE PERICARDIUM EXTRACELLULAR MATRIX TOWARD THE PERIODONTAL APPLICATION

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Abstract

Collagen membrane that was mainly from the bovine and porcine pericardium has been studied and widely applied for most manufacturers of bioprothetic materials, especially periodontal therapeutics. As many studied, bovine pericardium has higher collagen content than that from porcine, although both membranes have no significant different in calcification when treated with glutaraldehyde. In this study, acellular bovine was used to fabricated a biomembrane for periodontal reconstruction and regeneration. Acellular bovine pericardium was treated with glutaraldehyde at different concentrations and time points. The treatment of 0,1% glutaraldehyde for 6 hours was determined as the optimal fabrication protocol according to membrane properties, including thickness (0.2mm-0.5mm), tensile strength (5MPa-12MPa), tensile strain (15%-50%), around 5µm pore size, limited in vitro degradation (1%-5%), which met all criteria parameters for periodontal treatment. The fabricated membrane presented in vitro biocompatibility to human fibroblasts according to ISO10993-5. Moreover, the membrane promoted the in vitro migration of humane gingival fibroblasts, which indicated the application as a guided biomembrane in periodontal reconstuction and regeneration.

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References