

COLLAGEN-CHITOSAN SCAFFOLD FOR ORAL MUCOSA REGENERATION: A BRIEF REVIEW

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ABSTRACT

Collagen plays vital roles in epithelial cell adhesion. Previous research demonstrated excellent collagen capabilities in promoting re-epithelization of open wounds in pathological conditions which may circumvent the use of skin grafts. Nevertheless, pure collagen scaffolds demonstrated relatively weak mechanical strength especially upon hydration. Chitosan, on the other hand, is the second most common biopolymer found in nature and is known to be biodegradable, biocompatible and possess anti-bacterial properties. Incorporation of chitosan onto collagen bioscaffold may potentiate better usage for oral mucosa application. This study aimed to systematically review the use of collagen-chitosan scaffold for treatment of oral mucosa. Specific emphasis was given to the type of study involved in assessing its potential to be used as a bioscaffold. The methodology used is the search for articles published was performed using PubMed and Scopus databases using three keywords; "collagen", "chitosan" and "oral mucosa". Initial search yield in seventeen articles from both databases (Pubmed = 7, Scopus = 12). After careful scrutinisation, only ten articles were selected combining both databases. Collectively, the papers included in vitro and animal studies. All of the in vitro studies had cells cultured on a certain type of collagen chitosan scaffold and obtained positive results. In animal studies, articles showed successful reconstruction of full-thickness porcine oral mucosa equivalent using collagen-GAG-chitosan porous scaffold and repaired buccal mucosal full-thickness defects in rats using tissue engineered oral mucosa lamina propria cultured on chitosan-collagen. In conclusion, collagen-chitosan has the potential to create better scaffolds for oral mucosa regeneration than the ones previously used and is relevant to be furthered explored and studied using more databases.

Keywords: Collagen, Chitosan, Wound, Oral mucosa

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