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Tailored oral mucosa: Today's vision, tomorrow's reality

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The artificial generation of tissues, organs or even more complex living organisms was throughout the history of mankind a matter of myth and dream. During the last decades this vision became feasible and has been recently introduced in clinical medicine with the advent of tissue engineering which is a multidisciplinary science. The progress of tissue engineering for dental tissues is promising and various dental soft and hard tissues have been regenerated successfully *in vitro* using stem cells. Tissue engineering made extensive progress in the area of skin regeneration and recently several skin substitute products (epidermal, dermal or composite) are now commercially available. Due to the similarity between skin and oral mucosa, the development of engineered oral mucosa followed the same protocol i.e., started with the development of epithelial sheet, then composite oral mucosal equivalents either by seeding oral keratinocytes on three-dimensional cell seeded scaffold. Furthermore, both skin and mucosal substitutes can be used interchangeably. Recently, the tissue engineered oral mucosa has been further improved for either intraoral or extra oral use. Human-induced Pluripotent Stem Cells (iPSC) can be differentiated into patient-specific cells with a wide spectrum of cellular phenotypes and offer an alternative source of autologous cells for therapeutic use and regenerative therapies. The discovery of approaches to reprogram somatic cells into pluripotent cells opens exciting avenues for their use in personalized, regenerative therapies. The controlled differentiation of functional cell types from iPSC provides a replenishing source of fibroblasts. There is intriguing evidence that iPSC reprogramming and subsequent differentiation to fibroblast lineages may improve cellular functional properties. Augmenting the biological potency of iPSC-derived fibroblasts may enable the development of novel, personalized stem cell therapies to treat oral disease. They are used for reconstructions due to trauma, dental implants, pre-prosthetic surgery, congenital defects or oral cancer. This poster aims to present the novel and advanced oral tissue regeneration tailor therapy, its procedure, principle, advantages and challenges.

Biography

Karuna Nidhi has a unique and interesting career path to become a dentist with a simple philosophy to treat every patient with compensation, professionalism and gentle touch. She has built her practice with an emphasis on dental health care vs. disease care. Her ambition is to truly help others and create healthy smiles. She enjoys constantly learning what's new in oral care and prevention.

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