

27th EURO DENTISTRY CONGRESS

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27th Global Summit Expo on

DENTAL SCIENCE AND DENTAL PRACTICE

July 15-16, 2019 | London, UK

Simvastatin chitosan gel: A new approach for extraction socket healing and alveolar bone preservation

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Healing of the extraction socket has been the area of concern of many studies over the past years, due to the occurrence of post-extraction bone resorption and therefore, in many cases, the failure of implant placement, fixed or removable prosthesis. There have been many studies demonstrating the bone-promoting effect of simvastatin local application in animal models. Simvastatin in combination with chitosan is shown to increase bone volume, bone formation rate, and bone compressive strength along with inhibiting the osteoclastic activity, thus inhibiting alveolar bone resorption. The first experimental evidence in an animal model of the osteo-modulator effect of statins was reported by Mundy et al who demonstrated that treatment with simvastatin resulted in a significant increase in the rates and bone formation markers, and that the effect of statins were comparable to that induced by treatment with bone morphogenetic protein-2 (BMP-2) and fibroblast growth factor, which are known stimulants of bone metabolism. Thus, this study aims at examining the influence of simvastatin chitosan gel on bone healing in extraction socket of first molar in rat mandibles and developing an injectable affordable material that preserves the alveolar bone architecture by enhancing bone regeneration and preventing bone resorption, where the specimens were processed for scanning electron microscopy and detection of Vascular Endothelial Growth Factor and Fibronectin immunohistochemically.

Biography

Youmna M Sherif has her expertise in oral biology specifically bone biology and regeneration. Her experimental model for a proposed bone healing enhancement material creates new pathways for improving post-dental extraction recovery. She has built this model after years of experiments and research, along with teaching the basics of oral biology and dental morphology to freshmen students. The foundation of this research is based on the fact that statins show an impressive range of effects in the human body and can be leveraged for a wide variety of potential applications.

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