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Simvastatin: A nouvelle approach for extraction socket healing and preservation

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Studies concerning healing of extraction sockets revealed that sockets are filled with new bone by as much as two thirds in 40 days and completely filled with new bone in 10 weeks. There have been many studies demonstrating the bone-promoting effect of simvastatin local application in animal models. Simvastatin is shown to increase bone volume, bone formation rate, and bone compressive strength. The use of statins for bone regeneration is a promising and growing area of research. Statin drugs are mainly used in the treatment of high cholesterol since the discovery in the 1970s. The molecules produced by *Penicillium citrinum*, called citrinin and compactin (mevastatin), are potent inhibitors of an important enzyme 3-hydroxy-3-methylglutaryl-CoA reductase (HMG-CoA reductase) in the cholesterol production pathway. 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 (up to 2–3 times compared with controls) 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. The aim of this study is to examine the influence of simvastatin on bone healing in extraction socket of first molar in rat mandibles, where the specimens will be processed for scanning electron microscopy, light microscopy and immunohistochemical detection of Vascular Endothelial Growth Factor and Fibronectin.

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