

## The differentiation of periodontal pulp cells by mechanical stimulation

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Recently, there are lots of periodontal diseases and one of them is a defect of alveolar bone considered as a serious problem. Periodontal tissues are exposed to mechanical stress caused by occlusion and mastication, and both the cells and extracellular matrix in these tissues undergo architectural modification to equilibrate the applied stress. Therefore, in this study we are willing to recognize the effect of the mechanical tension on the osteogenesis of human periodontal dental pulp cells(h-PDPc). To identify the osteogenesis by mechanical stress in the dental pulp, we examined the effects of the tension on h-PDPc. We evaluated the effects of mechanical stimuli for the osteogenesis of h-PDPc on the silk scaffold using a bioreactor with 10% tension. The tension was applied with 0.2Hz during 5days and continuously applied during 10 days. We evaluated the differentiation of cells by RT-PCR, Western blot and immunohistochemistry. Application of 10% tension culture reported in increases in collagen type I, Fibronectin, osteoprotegerin, bone sialoprotein, and decreases in alpha-smooth muscle actin. These data suggest that mechanical stimulation can promote osteogenesis of h-PDPc.