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# Effects of different bone allografts with and without growth factors on proliferation, osteogenic differentiation and mineralization of MG-63 osteoblast-like cells

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**Background:** Predictable regeneration of alveolar bone defects has always been an important therapeutic challenge in implant dentistry. Allografts including FDBA and DFDBA are some substitutes being widely used and reported as having osteoinductive activities with some degrees of controversy.

**Aim:** The aim of this study is to determine the effect of growth factors (GFs) on osteoinductive activities of different bone materials.

**Materials & Methods:** MG-63 cells were exposed to 60 mg amounts of four different commercially available freeze-dried bone allografts with or without 5 ng/mL of two growth factors (singular or in combination). After 24 and 72 hours of incubation, the effect of water-soluble allograft released materials and soluble growth factors on cell viability and proliferation was assessed using methyl thiazol tetrazolium (MTT) assay. Cell

differentiation and mineralization was respectively assessed by real-time quantitative reverse transcription PCR (qRT-PCR) and alizarin red staining after 72 hours of exposure.

**Results:** The effect of different GFs on cell/allograft containing plates was affected by the allograft type. Early proliferative and late osteoinductive effects of GFs were more consistent in TGF- $\beta$  rather than PDGF. PDGF only showed limited osteoinductivity in terms of accelerating BSP and OC genes.

**Conclusions:** Based on the results of this study, TGF- $\beta$  can have additional osteoinductive effect on allografts/cells combination and its application may be beneficial in *in vitro* and clinical regenerative studies.

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