

**Growth factors to stimulate bone formation.**

- **Baylink DJ,**
- **Finkelman RD,**
- **Mohan S.**

Department of Medicine, Loma Linda University, California.

During the past decade we and others have shown that bone is a storehouse for growth factors. Accordingly, bone contains a number of growth factors including insulin-like growth factors I and II (IGF-I, IGF-II) transforming growth factor (TGF-beta 1, TGF-beta 2), platelet-derived growth factor, basic and acidic fibroblast growth factor, and bone morphogenetic proteins (BMPs). Osteoblasts have been shown to produce many of these growth factors, which then act in an autocrine and paracrine fashion. The production of these growth factors is regulated by both systemic hormones and local mechanical stress. Recent studies on the relative distribution of bone growth factors during different physiologic and pathologic situations indicate that the concentration of bone growth factors is not invariant and provide indirect evidence that growth factors deposited in bone have physiologic significance. In addition, many of these bone growth factors have been shown to increase bone formation either systemically or locally in vivo. Based on the past findings, we propose that different growth factors may have a specific role in regulating proliferation and differentiation of different stages of osteoblast lineage cells and play important roles in the local regulation of bone formation.

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