

In vitro effects of Concentrated Growth Factors on BMP-2 synthesis by human osteoblasts

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Bone morphogenetic proteins, and especially BMP-2, play an important role in bone homeostasis and regeneration, stimulating osteoblasts differentiation. Concentrated Growth Factors (CGF) is an autologous platelet preparation, obtained from the patient's own blood, with a specific protocol of centrifugation and containing several different growth factors, including BMP-2, with an average release of 5-10 pg (1). So, in this study, we investigated the in vitro effect of CGF on BMP-2 synthesis by human osteoblasts (HOBs). Cells were cultured in presence of CGF for 9 days and then the cell number were determined by using an automated cell counter. To test the effect of CGF on BMP2 release from osteoblasts, the supernatants were collected, centrifuged at 1200 rpm for 10 min at room temperature and used to perform the BMP-2 ELISA assay. In addition, the expression of BMP-2 on fixed HOBs was also evaluated by performing an immunocytochemical analysis. Our results showed that CGF significantly enhances HOBs proliferation and increases BMP2 synthesis by HOBs that could act also in paracrine way, together with CGF derived BMP2, to better promote bone regrowth.

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References

- [1] Borsani et al. (2015) Biological Characterization and In Vitro Effects of Human Concentrated Growth Factor Preparation: An Innovative Approach to Tissue Regeneration *Biol Med (Aligarh)* 7:5; doi: 10.4172/0974-8369.1000256.

Keywords

BMP-2; Concentrated Growth Factors; lithium chloride; human osteoblasts.