

**Bone morphogenetic protein 7 (bmp-7) stimulates proteoglycan synthesis in human osteoarthritic chondrocytes in vitro.**

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BMP-7 is a member of the TGF-beta superfamily which is supposed to be one of the most potent anabolic factors of chondrocytes. In this study we analysed the effect of BMP-7 on three dimensional cultured chondrocytes with and without serum. Cartilage samples from fourteen patients with osteoarthritis of the knee were harvested and chondrocytes were cultivated in alginate-beads with and without serum supplementation (10% FCS). BMP-7 was added in three different concentrations (200, 600 and 1000 ng/ml). After 4 and 21 days PG concentration was determined by a Blyscan-Assay. For gene expression analysis of aggrecan (AGG) quantitative Lightcycler-PCR was used to estimate the mRNA levels. Under serumfree culture conditions there was no stimulation after 4 days but there was a twofold increase of PG concentration after 21 days. Using BMP-7 together with serum supplemented medium we found comparable results, however not as pronounced. AGG expression was increased only after 4 days but not after 21 days. Beside a stimulatory effect under serumfree conditions we also found a stimulatory effect of BMP-7 in the presence of serum. This study pronounces that BMP-7 might be a suitable anabolic activator of osteoarthritic chondrocytes.

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