Effect of bone morphogenetic protein-2 on normal and osteoarthritic human articular chondrocytes.

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Source

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Abstract

In this study, we investigated whether Bone Morphogenetic Protein-2 (BMP-2) could modulate dedifferentiation, apoptosis and proliferation capacity in the normal and OA cultured chondrocytes. The articular chondrocytes from normal (n = 4) and OA (n = 4) cartilages were harvested separately. The chondrocytes were cultured in monolayer in the presence of 100 ng mL(-1) BMP-2 and 1% FBS as a test group and 1% FBS alone as a control group. Then, the chondrocytes were harvested and assessed for morphology with invert microscopy, proliferation by using MTT-assay and apoptosis with caspase-3 immunocytochemistry. The results indicated that the normal and the most OA chondrocytes showed round and polygonal appearance with chondrocyte-like morphology in BMP-2 treated groups after 6 days. The MTT proliferation test didn't show significant difference between test and control groups. The OA cells showed proliferation rate higher than the normal cells and significant difference in the presence of BMP-2 was observed (p<0.05). Positive immunostaining of caspase-3 in test and control groups was 1 and 20% in normal and 30 and 43% in OA groups, respectively. The percentage of apoptosis was reduced in the presence of BMP-2. In conclusion, it appears that BMP-2 involves in suppression of dedifferentiation and apoptosis processes of cultured human chondrocytes.