



OSTEOARTHRITIS & CARTILAGE

Glucosamine Inhibits IL-1 β -Induced NF κ B Activation in Human Osteoarthritic Chondrocytes

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OBJECTIVE

Glucosamine sulfate (GS) is a commonly used drug for the treatment of osteoarthritis. The mechanism of the action of this drug does, however, remain to be elucidated. In human osteoarthritic chondrocytes (HOC) stimulated with a proinflammatory cytokine, we studied whether GS could modify the NF κ B activity and the expression of COX-2, a NF κ B-dependent gene.

METHODS

Using HOC in culture stimulated with interleukin-1 β (IL-1 β), the effects of GS on NF κ B activation, nuclear translocation of NF κ B/Rel family members, COX-1 and COX-2 expressions and syntheses and prostaglandin E2 (PGE2) concentration were studied.

RESULTS

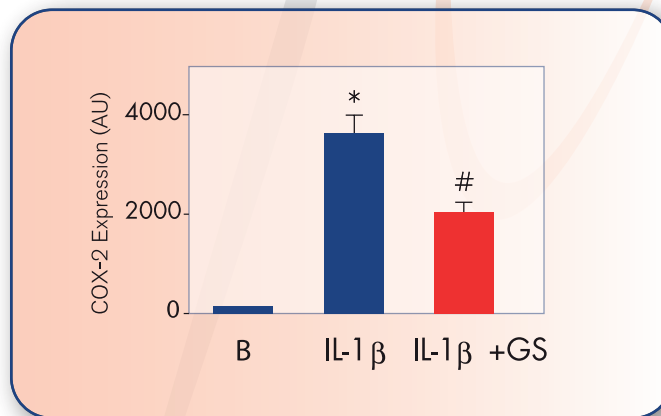
GS significantly inhibited NF κ B activity in a dose-dependent manner, as

well as the nuclear translocation of p50 and p65 proteins. Furthermore, GS-preincubated IL-1 β -stimulated HOC showed an increase in I κ B α in the cell cytoplasm in comparison with HOC incubated with IL-1 β alone. GS also inhibited the gene expression and the protein synthesis of COX-2 induced by IL-1 β , while no effect on COX-1 synthesis was seen. GS also inhibited the release of PGE2 to conditioned media of HOC stimulated with IL-1 β .

CONCLUSIONS

GS inhibits the synthesis of proinflammatory mediators in HOC stimulated with IL-1 β through a NF κ B-dependent mechanism. Our study further supports the role of GS as a symptom- and structure-modifying drug in the treatment of OA.

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Effects of GS on COX-2 mRNA expression. Densitometric analysis corresponding to changes in COX-2 mRNA levels. *P<0.05 vs basal; #P<0.05 vs IL-1 β alone.



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