Rebamipide Protects Against Intervertebral Disc Degeneration Through Suppression of NF-κB Signaling Pathway

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Abstract

Intervertebral disc (IVD) degeneration is a common chronic degenerative and disabling spinal disease in which the inflammatory response plays a crucial role. Rebamipide (REB) prevents gastric mucosal damage by suppressing inflammatory cytokines via the NF-κB signaling pathway. The aim of this study was to investigate how REB affects the pathological process of IVD degeneration. In our study, nucleus pulposus tissue and cells were obtained from patients and mice, and western blotting, real-time PCR, immunohistochemistry, immunofluorescence, histological staining, and flow cytometry were used to identify the mechanism of REB in TNF-α-induced IVD degeneration, demonstrating that TNF-α induced lumbar disc degeneration and REB prevented lumbar disc degeneration induced by the TNF-α pathway. REB inhibited TNF-α-mediated degradation of the extracellular matrix and protected the inflammatory responses of TNF-α-induced disc degeneration. Furthermore, a mechanistic study verified that REB could suppress TNF-α-mediated disc degeneration through the NF-κB signaling pathway. The role of REB in disc degeneration in vivo was validated using a needle puncture model in rats. Overall, REB inhibited lumbar disc degeneration by suppressing inflammatory responses via the NF-κB signaling pathway. REB provides a potential therapeutic treatment for back pain due to IVDD.

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