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Basic Study

6-Gingerol protects nucleus pulposus-derived mesenchymal stem cells from oxidative injury by activating autophagy

Protective effect of 6-gingerol on NPMSCs

Abstract

BACKGROUND

To date, there has been no effective treatment for IDD. NPMSCs showed encouraging results in IDD treatment, but the overexpression of ROS impaired the endogenous repair abilities of NPMSCs. 6-GIN is an antioxidant and anti-inflammatory reagent that might protect NPMSCs from injury.

AIM

To investigate the effect of 6-GIN on NPMSCs under oxidative conditions and the potential mechanism.

METHODS

The CCK-8 assay was used to evaluate the cytotoxicity of hydrogen peroxide and the

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Previous studies have confirmed that human degenerated and normal IVD contained human **nucleus pulposus-derived mesenchymal stem cells** (hNP-MSCs) [6–9] and hNP-MSCs fulfilled morphological, immunophenotypic, and differentiation definition criteria described by the International Society of **Cell Therapy for mesenchymal stromal cells**.

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Keywords: PI3K/Akt, Human **nucleus pulposus-derived mesenchymal stem cells**, Hypoxia and nutrition deficiency, Intervertebral disc degeneration Background Intervertebral disc (IVD) degeneration appears to be the foremost cause of the back pain [1], which causes a ...

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Among them, **curcumin** and 6-gingerol could promote Beclin1 activation by inhibiting the PI3K/AKT/**mTOR signaling pathway** and triggering the **autophagy survival** response of **anti-oxidative stress**, so as to protect endothelial cells from **oxidative stress**.

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nucleus pulposus mesenchymal stem cells in response to changes in the acidic environment during intervertebral disc degeneration, " **Stem Cells and Development** , vol. 26, no. 12,

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