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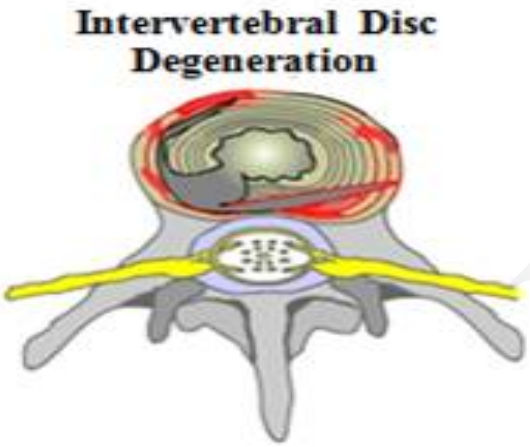
Adenovirus-mediated GDF-5 promotes the extracellular matrix expression in degenerative nucleus pulposus cells

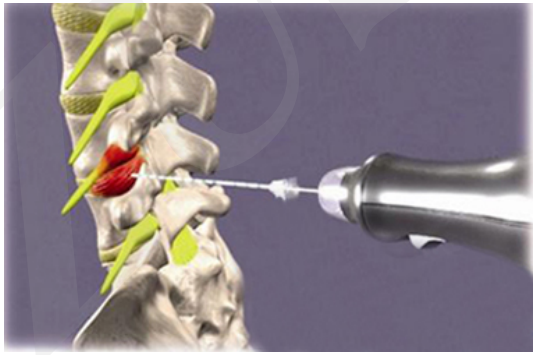
Keywords: Intervertebral disc degeneration, Growth and differentiation factor-5 (GDF-5), Nucleus pulposus, Adenovirus, Gene therapy

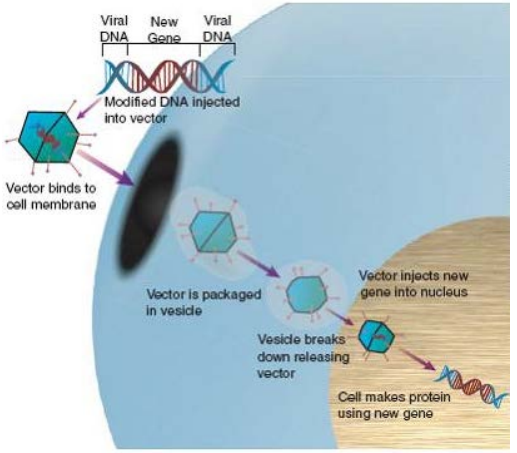
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Research Summary

This article mainly focused on the effect of adenovirus mediated GDF-5 for the extracellular matrix expression and the proliferation of human degenerative nucleus pulposus (NP) cells and explore a candidate gene therapy method for intervertebral disc degeneration.



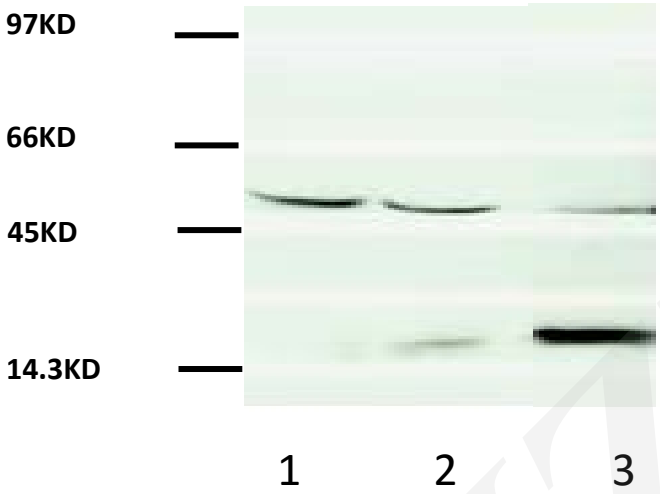




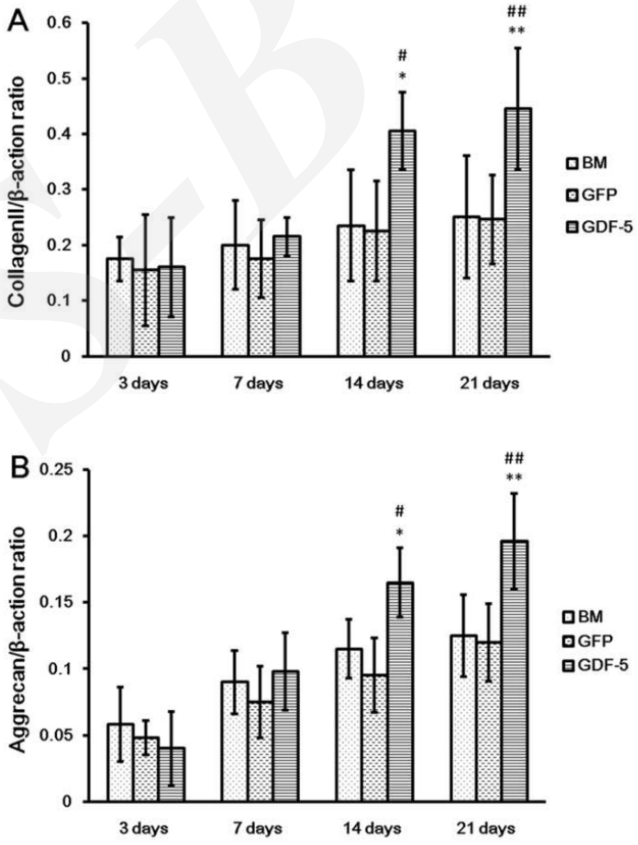
Innovation points:

The effect of GDF-5 on human degenerative NP cells was studied for the first time.

Research results



Western blotting of GDF-5 recovered from the supernatant of NP cells at 21 days post infection. 1.NP cell ; 2.Ad-GFP group; 3.Ad-GDF-5 group



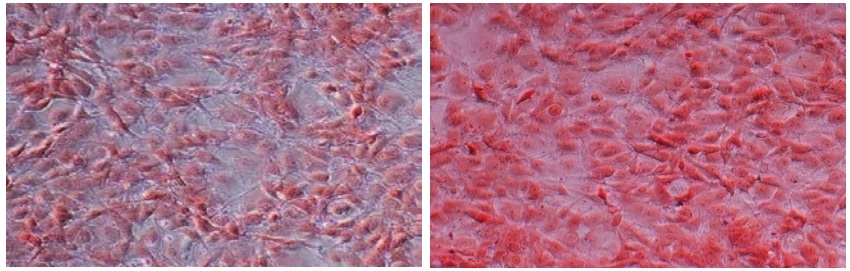
Gene expression patterns in human NP cells following infection by Ad-GDF-5, Ad-GFP, or no adenovirus (BM group) over 3, 7, 14, and 21 days. *P<0.05 vs. BM group; **P<0.01 vs. BM group; #P<0.05 vs. Ad-GFP group; ##P<0.01 vs. Ad-GFP group

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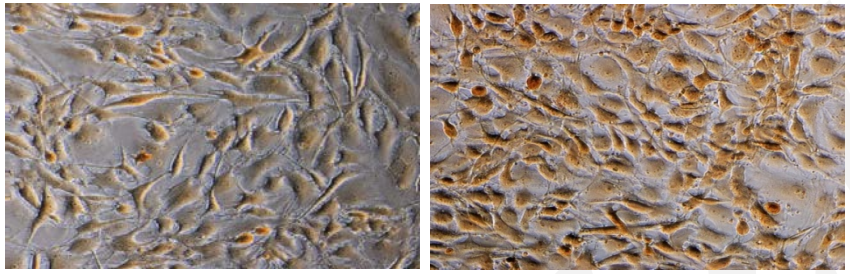
Research results

BM Group

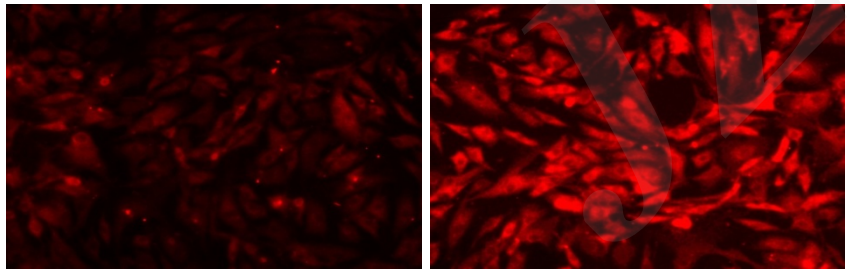
GDF-5 Group



Safranin-O staining

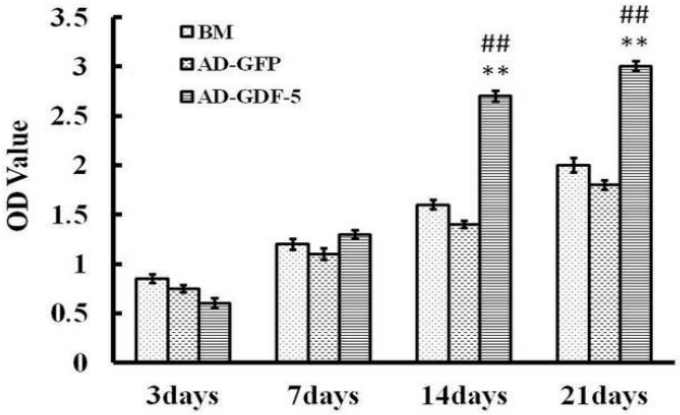


Collagen II Immunohistochemical staining



Aggrecan Immunohistochemical staining

The ECM secretion at 21 days post infection



NP cells proliferation after Transfection.
**P<0.01 vs. BM group;
##P<0.01 vs. Ad-GFP group.