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Novel nano-microspheres containing chitosan, hyaluronic acid, and chondroitin sulfate deliver growth and differentiation factor-5 plasmid for osteoarthritis gene therapy

Keywords: Osteoarthritis, Gene therapy, Chitosan, Hyaluronic acid, Chondroitin sulfate, Growth and differentiation factor-5 (GDF-5) plasmid

Research Summary

Nano-microspheres loaded with GDF-5 plasmid have been successfully prepared with chitosan, hyaluronic acid, and chondroitin sulfate, as a potential therapy method for osteoarthritis. These nano-microspheres could effectively promote the expression of chondrocyte specific extracellular matrix, collagen II and aggrecan, in vitro and in vivo. When these novel nano-microspheres are injected into lesioned joints, osteoarthritis symptoms were obviously relieved and the progress of osteoarthritis slowed down in vivo.

Innovation points:

A novel non-viral vector loaded with GDF-5 plasmid using chitosan, hyaluronic acid and chondroitin sulfate are prepared, and used for osteoarthritis (OA) gene therapy firstly.

Graphical Abstract

group

