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THERAPEUTIC EFFECTS OF BONE MARROW MESENCHYMAL STEM CELLS DERIVED EXOSOMES ON OSTEOARTHRITIS

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Background: Mesenchymal stem cells (MSCs) have shown chondroprotective effects in clinical models of osteoarthritis (OA)1,2.

Objectives: The study aimed to investigate the therapeutic potential of exosomes from human bone marrow MSCs (BM-MSCs) in alleviating OA.

Methods: The anterior cruciate ligament transection (ACLT) and destabilization of the medial meniscus (DMM) surgery were performed on the knee joints of a rat OA model, followed by intra-articular injection of BM-MSCs or their exosomes. In vitro, osteoarthritic chondrocytes were treated with exosomes. The expression of certain markers and cytokines was determined using ELISA, qPCR, and imaging.

Results: BM-MSCs-exosomes alleviated cartilage destruction, reduced joint damage, and restored the trabecular bone of OA rats. In addition, lncRNA MEG3 were investigated in chondrocytes of a rat OA model, followed by intra-articular injection of BM-MSCs or their exosomes.

Conclusion: LncRNA MEG3 were upregulated in BM-MSCs-exosomes, and treated chondrocytes showed lower expression of pro-inflammatory cytokines and increased expression of anti-inflammatory cytokines. BM-MSCs-exosomes alleviated cartilage destruction, reduced joint damage, and restored trabecular bone of OA rats.