

Combined effects of probiotic and chondroprotector during osteoarthritis in rats

[Oleksandr Korotkyi¹](#), [Kateryna Dvorshchenko¹](#), [Tetyana Falalyeyeva²](#), [Oksana Sulaieva³](#), [Nazarii Kobylak⁴](#), [Ludovico Abenavoli⁵](#), [Sharmila Fagoonee⁶](#), [Rinaldo Pellicano⁷](#), [Liudmila Ostapchenko¹](#)

PMID: 32192320

DOI: [10.23736/S0031-0808.20.03841-0](https://doi.org/10.23736/S0031-0808.20.03841-0)

Abstract

Background: Osteoarthritis (OA) is a joint affection, defined by articular cartilage demolition, risks of which rise with age. The aim of this study was to compare the efficacy of chondroitin sulfate (CS) course and multistrain live probiotic (LP) administered alone or in combination on the expression of TLR-2, TLR-4, TNF- α and NF- κ B in articular cartilage, subchondral bone and synovial membrane during OA in rats.

Methods: OA was induced in male rats by injecting monoiodoacetate (MIA) in right hind knee. Therapeutic groups received 3 mg/kg of chondroprotector (ChP) CS for 28 days and/or 140 mg/kg of LP diet for 14 days. The expression of TLR-2, TLR-4, TNF- α and NF- κ B in articular cartilage, subchondral bone and synovial membrane were determined with immunohistochemical staining kits (Thermo Fisher Scientific).

Results: It was established that MIA injection is associated with long-term structural changes in joint tissues that corresponded to OA-like features and associated with activation of pathogen-recognizing molecules and proinflammatory signaling pathways expression. Separate therapy with ChP and probiotics slightly decreased OA score limiting cell death and subchondral bone resorption. However, these changes were not associated with a significant decrease in TLR-2, TLR-4, NF- κ B and TNF- α expression. On the other hand, the combination of ChP and LP treatment significantly decreased OA score. This correlated with a decrease in TLR-2, TLR-4, NF- κ B and TNF- α expression in chondrocytes and synovial cells.

Conclusions: The outcomes of our research prove that ChPs amplify the positive action of LPs in OA attenuation.

Copyright © 2020 EDIZIONI MINERVA MEDICA

