

Exercise and nutrition protective effects on cartilage disorders, muscle wasting and liver diseases

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The beneficial effects of Extra Virgin Olive Oil (EVOO), the main fat source in Mediterranean diet, are widely studied thanks to its anti-inflammatory and antioxidant properties. Lubricin is a chondroprotective glycoprotein, with lubricant properties. A joint injury causes an increased cytokine expression, associated with decreased lubricin synthesis and predisposition to cartilage degeneration [1]. The aim of the study was to evaluate the beneficial role of EVOO-enriched diet and physical activity, on osteoarthritic cartilage of rats. These effects were assessed through lubricin and IL-6 expression in rat joint tissues. Osteoarthritis was induced mechanically by anterior cruciate ligament transection (ACLT). The 48 animals were divided into 6 groups: 1–control; 2–ACLT and common diet (CD); 3–ACLT, CD and treadmill training (TT); 4–ACLT, Sicilian EVOO diet and TT; 5–ACLT, Tunisian EVOO diet and TT; 6–ACLT, Tunisian EVOO and leaves extract diet and TT. We performed histomorphometric, histological, immunocytochemical, immunohistochemical and biochemical analysis on articular cartilage, skeletal muscle, liver and synovial fluid of rats. The results showed the beneficial effect of physical activity and EVOO supplementation on rat tissues. ACLT determined an increase in IL-6 expression and a significant decrease in the lubricin expression in articular cartilage, while physical activity and EVOO diet (especially S-EVOO), determined the return to normal values when compared to control group. Moreover, EVOO does not cause hepatic steatosis and muscle fibers of all groups did not show damaged histological structure and hypertrophy [2]. Our findings suggest that mechanical stimulation is able to increase the release of lubricin in articular cartilage, while the anti-inflammatory properties of EVOO reduces the expression of IL-6. In conclusion, the results showed a beneficial effect of the conjunction of EVOO-based diet and physical activity on the preservation of rat tissues.

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References

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- [2] Szychlinska et al. (2018) *Eur J Nutr*

Key words

Lubricin, IL-6, EVOO, Osteoarthritis, ACLT, sarcopenia, steatosis, cartilage, skeletal muscle, liver.