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MEDICAL SCIENCES

MODERN APPROACHES TO THE USE OF CHONDROITIN SULFATES IN SPORTS MEDICINE AND REHABILITATION

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Introduction. Chondroitin sulfate is one of the key components of cartilage tissue, which ensures its elasticity and ability to withstand stress. In sports medicine, it is used to prevent joint and ligament injuries, as well as in rehabilitation programs. Today, researchers are focusing on studying the effectiveness of chondroitin sulfate in chronic degenerative changes and injuries, particularly in athletes with high physical activity.

Biochemical characteristics and mechanism of action. Chondroitin sulfate is a sulfated glycosaminoglycan that is a part of the proteoglycans of cartilage tissue in the human body. It maintains the structural integrity of cartilage due to its ability to retain water and provide shock absorption properties. It should be noted that chondroitin sulfate in the human body:

- inhibits the action of enzymes that destroy cartilage tissue (matrix metalloproteinases);

- reduces the activity of inflammatory mediators, such as interleukin-1, which

helps to reduce degenerative changes in the joints;

- stimulates the synthesis of hyaluronic acid and type II collagen, which promotes tissue regeneration.

Use of chondroitin sulfate in sports medicine. In athletes, chondroitin sulfate is used as a prophylactic and therapeutic agent to maintain joint health. In particular, the effectiveness of its use in osteoarthritis has been studied. The ESCEO study showed that taking chondroitin sulfate at a dose of 800 mg per day for 6 months reduces pain and improves joint function in patients with degenerative joint disease. A meta-analysis of clinical trials involving more than 9000 participants confirmed the effectiveness of chondroitin sulfate in reducing pain by 52%. [1, p. 1799-1807].

According to the results of a study of chondroitin sulfate use among professional athletes suffering from chronic knee pain, pain reduction occurred by 28% after three months of taking the drug compared to placebo [2].

As for the rehabilitation of athletes using chondroitin sulfates, after surgery, such as arthroscopy or ligament reconstruction, the use of chondroitin sulfates helps to reduce swelling, reduce pain and accelerate recovery. Studies have shown that patients who took chondroitin sulfate showed improvement in joint function 20% faster than those who did not receive this therapy [3, p. 19-21].

Chondroitin sulfate is often combined with glucosamine because both drugs have a similar mechanism of action [4]. However, the MOVES study demonstrated that the combination of chondroitin sulfate and glucosamine may provide better results in patients with osteoarthritis, reducing pain symptoms by 50% after 6 months of therapy [5, p. 795–808].

To maintain joint health in athletes, the recommended dose for prevention and treatment is 800 to 1200 mg of chondroitin sulfate per day.

As for the duration of chondroitin sulfate use, the course of treatment should last at least 3 months to achieve a stable effect.

Chondroitin sulfate has a high safety profile, but mild side effects such as gastric discomfort are possible.

Conclusions. Chondroitin sulfate is an effective tool for maintaining joint health in athletes, which has been confirmed by numerous clinical studies in the scientific literature. In rehabilitation programs for athletes, chondroitin sulfate promotes faster recovery from injuries and surgical interventions. Further studies of the effectiveness of chondroitin sulfate in combination with glucosamine in sports medicine and rehabilitation are promising.

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