# Randomized, controlled, clinical study to evaluate the efficacy and safety of glucosamine hydrochloride and chondroitin sulphate in combination with physical therapy (HIRO + kinesitherapy) versus physical therapy alone in patients suffering from osteoarthritis of the knee

## Studio clinico randomizzato, controllato per valutare l'efficacia e la sicurezza dell'utilizzo dell'associazione glucosamina cloridrato e condroitin solfato in associazione alla terapia fisica (Laserterapia HILT + kinesiterapia) contro solo terapia fisica in pazienti affetti da osteoartrosi del ginocchio

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***SUMMARY***

*Aim*. Glucosamine and chondroitin sulphate are high molecular weight polysaccharides (glycosaminoglycans), which are among the essential constituent components of articular cartilage. In vitro, glucosamine has been shown to alter the metabolism of chondrocytes and play an immunoregulatory function, an action that could reduce inflammation. Chondroitin sulphate in physiological conditions, contributes to the elasticity of cartilage and inhibits its degradation by enzymes such as elastase and hyaluronidase. The combined use of glucosamine and chondroitin sulphate could have a synergistic role in reducing the symptoms and slowing down the advance of joint damage in osteoarthritis patients. Based on these assumptions, we have studied the effectiveness and tolerance of the association of glucosamine hydrochloride and chondroitin sulphate in improving pain symptoms and joint function in patients affected by osteoarthritis of the knee.

*Methods*. A single site, randomized, prospective, controlled study, was conducted for a duration of 24 weeks, to assess the safety and efficacy of taking glucosamine and chondroitin sulphate, for the treatment of knee osteoarthritis (OA). Sixty patients, with knee OA (documented by X-ray), were divided randomly into two treatment groups. In GROUP A patients were treated with a cycle of 3 weeks of laser therapy and a cycle of 24 weeks of kinesitherapy, while in GROUP B the same treatment protocol was associated with the administration of three capsules per day of the association of glucosamine hydrochloride and chondroitin sulphate.

*Results*. The Wilcoxon test conducted in pairs at different time intervals in the two treatment groups, showed a reduction in pain as well as an improvement in joint function in both follow-up visits (3 and 6 months from baseline) for all the efficacy variables. in particular, at month six, GROUP B treated with the association of glucosamine hydrochloride with chondroitin sulphate, compared to GROUP A, showed a significant improvement from baseline to endpoint pain in movement (measured by VAS – 41.2 mm vs. -26.2 mm); Lequesne's index (-3.8 vs. -0.9); and the intensity of crepitus (33% vs. 6%).

*Conclusions*. The association of glucosamine hydrochloride with chondroitin sulphate therapy associated with non-pharmacological treatments (HIRO and kinesitherapy) is configured as an alternative to current therapies for the treatment of osteoarthritis.

KEY WORDS: Osteoarthritis - Glucosamine - Chondroitin sulfates - Physical therapy modalities.