

TECHNICAL MONOGRAPH

PRODUCT NAME: HyalcarePLUS

CONSTITUENTS:	Common Name	Scientific Name
	Chondroitin	
	Fish oil	<i>Jecorus oleum</i>
	Hyaluronic acid	
	MSM	<i>Methyl sulfonyl methane</i>
	Glucosamine hydrochloride	

INTENDED PURPOSE

HyalcarePLUS is for the care and management of osteoarthritic cartilage in equine athletes and competition horses. Its long-term effects are more effective than joint injections. Supplementation improves overall joint health, reduces pain, reduces inflammation, provides cellular nourishment and boosts cartilage synthesis.

EVIDENCE FOR EFFICACY

A pilot study of the function of Hyalcare on cartilage in vitro provided evidence for reducing indicators of inflammation, including a reduced loss of glycosaminoglycans and nitric oxide production (Pearson and Lindinger 2008). This may indicate that the product may result reduced cartilage breakdown when given to animals with joint inflammation.

- **Chondroitin sulphate is a complex structural carbohydrate that is the main structural component of cartilage and provides much of its resistance to compression. Oral supplements of chondroitin sulfate improve synovial fluid properties in osteoarthritis patients, reduce inflammatory markers and oxidative stress. When used with glucosamine it may prevent cartilage GAG degradation. Chondroitin has beneficial effects on the metabolism of tissues involved in osteoarthritis including chondrocytes, synoviocytes and cells from subchondral bone (Hochberg et al. 2013; Dechant et al. 2005; Matsuno et al. 2009). Alleviated symptoms of degenerative joint disease are evidenced by improved stride characteristics in horses (Forsyth et al. 2006).**
- **Fish Oil** (*Jecorus oleum*) is the partially destearinated fixed oil from fresh livers of cods, haddocks and other fish. It is a good dietary source of vitamins A, D, E and is a rich source of N-3 polyunsaturated fatty acids, popularly known as omega-3 fatty acids. The main omega-3 fatty acids in fish oil are eicosapentaenoic acid (C20:5 n-3, EPA) and docosahexaenoic acid (C22:6 n-3, DHA). Dietary fish oil has been associated with maintenance of good health, maintenance and support cardiovascular health, reduced pain of rheumatoid arthritis, improved cognitive health and/or brain function, improved mood balance and reduced serum triglycerides / triacylglycerols (de Moffarts et al. 2007; Anonymous 2010; Vineyard et al. 2010). It can be also be used topically to promote wound healing. (*Jecoris Oleum* Summary Report, Committee for Veterinary Medical Products, The European Agency for the Evaluation of Medicinal Products, June 1999. http://www.ema.europa.eu/docs/en_GB/document_library/Maximum_Residue_Limits_-_Report/2009/11/WC500014508.pdf).
- **Glucosamine hydrochloride** is one of two forms of glucosamine that can be provided as an oral supplement for reducing the pain, inflammation and oxidative stress associated with joint disease. It has also been shown to improve synovial fluid

as an oral supplement for reducing the pain, inflammation and oxidative stress associated with joint disease. It has also been shown to improve synovial fluid properties in joints of osteoarthritic patients. (Block et al. 2010; Kantor et al. 2013; Matsuno et al. 2009) and is associated with alleviating signs of inflammation and stride length in horses (Forsyth et al. 2006).

- **Hyaluronic acid (HA, hyaluronate, hyaluronan)** is an anionic, nonsulfated glycosaminoglycan found in connective, epithelial, and neural tissues. HA is an important compound within the synovial fluid of joints, where it exerts lubricant and anti-oxidant activities (Braga et al. 2014; Muller et al. 2010). Intra-articular injection of HA-containing mixtures support some potential clinical sign or disease modifying action in horses (Frisbie et al. 2013), and may be beneficial for the treatment of osteochondrosis in young horses (Carmona et al. 2009).
- **Methyl sulfonyl methane (MSM)** is a naturally occurring sulfur compound with well-known antioxidant and anti-inflammatory properties. MSM alleviated pain, inflammation and improved physical function on osteoarthritis patients (Debbi et al. 2011; Kalman et al. 2012). These benefits were enhanced when MSM was used in combination with glucosamine (Usha and Naidu 2004). Chronic daily oral supplementation exerts protective effects on oxidative and inflammatory exercise-induced injury in humans and horses (Marañón et al. 2008).

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