**Analytical Constituents**
Vitamin C 2.500 mg
MSM 4.000 mg

**Composition:** Toasted and micronized carob pulp, sodium chloride, methylsulfonylmethane (MSM).

**Additives/kg:** Nutritional additives: Vit C 83. 3 g. Binding agents: Sepiolite 90 g.

**Properties and Mechanism of Action:**

**Methylsulfonylmethane (MSM)**
- Methylsulfonylmethane (MSM) is a natural organic compound rich in sulphur (34% elemental sulphur). It is found naturally in many foods (certain fruits, vegetables, cereals and meats) and even in human beings. It is an odourless, white crystalline substance with a slightly bitter taste. MSM is an oxidative metabolite of dimethylsulphoxide (DMSO).
- MSM provides sulphur that is used in the body to hold together the protein chains of connective tissue, hair and nails. It is also used to form cysteine, an amino acid essential for the production of collagen, the natural reparative of connective tissue in joints, ligaments and tendons.
- Horses with arthritis have been found to have lower sulphur levels, approximately 1/3 the amount in normal joints (Rizzo et col, 1995).
- *In vitro* studies indicate that MSM is an anti-inflammatory and antioxidant (Alam SS et col, 1983; Beilke MA et col, 1987).
- In a double-blind study in people with osteoarthritis of the knee, administration of MSM resulted in a significant decrease in pain, clinical improvement and improved ability to perform everyday activities compared with a placebo (Kim et col, 2006).
- Other studies in people and animals have shown that MSM reduces pain and inflammation, increases flexibility and elasticity of the conjunctive tissue of joints, ligaments and tendons, helping in the treatment of lesions of the locomotor system and reducing recovery time (Usha et Naidu, 2004; Lawrence RM, 1998).
- By promoting collagen production, MSM helps reduce scar tissue, accelerating wound healing.

**Vitamin C**
- Vitamin C or Ascorbic Acid is a water-soluble vitamin. It is one of the most powerful antioxidants that exist, key for the formation of collagen and glycosaminoglycans, and enhances the immune response.
- As an antioxidant, Vitamin C intervenes in a large number of redox reactions, helping the elimination of free radicals produced by the body and exogenously.
- It participates in the synthesis of collagen and glycosaminoglycans and is essential for the development and maintenance of the functions of supportive tissue (conjugate tissue, bones, cartilages, dentine…), helping in the prevention and treatment of lesions of the locomotor system. The optimal intake of Vitamin C accelerates the healing process of bone lesions and injuries.
- Vitamin C stimulates the body's defence mechanisms, helping to improve the immune system response.
- Finally, Vitamin C increases iron absorption; it also participates in the synthesis of carnitine, which is responsible for taking fatty acids to the mitochondria to produce energy, it plays a key role in the synthesis of noradrenalin, an essential neurotransmitter for good brain function; and is essential for the synthesis of certain hormones.
Synergistic MSM + Vitamin C

- Studies in athletic horses have shown that MSM and Vitamin C act synergistically to protect the joints from oxidative stress produced by exercise (Marañón et al., 2008).
- Besides working synergistically with Vitamin C, MSM is also thought to enhance the effect of B complex vitamins, Vitamins A, D and E, amino acids, Se, Ca, Mg and others, increasing their bioavailability.

Indications:

- Chronic lesions of the locomotor system (joint, ligaments, tendons...) to manage pain and inflammation, accelerate regeneration and improve the elasticity of connective tissue, and shorten recovery time.
- Regularly, as a preventive measure, to prevent musculoskeletal lesions in athletic horses submitted to intense exercise.
- Also preventive in lengthening the athletic life of competition horses by promoting the health and function of joints and connective tissue.
- Summer dermatitis, for its dual ability to manage pain and inflammation, and accelerate the healing of injured skin.
- In any chronic or long-term inflammatory process in horses with a history of gastrointestinal, hepatic or renal problems or older horses where NSAIDs may be contraindicated.
- In mature horses on reaching the age of 20 (60 in human years), or before if they underwent intense athletic activity, in order to improve mobility, health and well-being, and in short, their quality of life.

Target Species: Equines.

Safety: MSM and Vitamin C are very safe substances. Studies in rats (Horváth et al., 2002) concluded that MSM is well tolerated both in acute (2 g/kg single dose) and chronic (1.5 g/kg for 90 days) overdose. In humans, a 30-day study using one dose of 2600 mg/day did not reveal any side effect (Barrager et al., 2002). VETERINARY CLINICAL CARE® Mobility I is an ideal product for horses that need long-term locomotor support, allowing the reduction or elimination of NSAIDs to minimise their potential side effects, and is suitable for all ages and breeds.

Directions of Use: Stir product before use. The measuring cup included, up to the mark, is equivalent to 30 grams. Administer every day, for at least 30 consecutive days, directly into the feeder or mixed with the ration: adult horses (500 kg), 1 measure; foals and ponies, 1/2 measure.

Warnings: This product does not contain any substance banned from competition. Keep container tightly closed, in a cool, dry place, protected from direct sunlight and out of the reach of children and animals. Complementary feed for horses, not intended for human consumption.

Presentation: 930 g (31 doses).

Bibliography:

- Alam SS, Layman DL. Dimethyl sulfoxide as a cholesterol-lowering agent in cultured fibroblasts exposed to low density lipoproteins in culture, Biochim Biophys Acta 1982;710:306-313.
VETERINARY CLINICAL CARE®

Mobility I

Highly Palatable, MSM and Vitamin C Synergistic Supplement, Formulated to Promote Optimal Health of the Locomotor System

- Marañón G et col. The effect of methyl sulphonyl methane supplementation on biomarkers of oxidative stress in sport horses following jumping exercise, Acta Vet Scand. 2008 Nov 7;50:45
- Pearson TW, Dawson HU, Lackey HB. Natural occurring levels of dimethyl sulfoxide in selected fruits, vegetables, grains, and beverages, J Agric Food Chem 1981;29:1089-1091.
- Rose SE, Chalk JB, Galloway GJ, Doddrell DM. Detection of dimethyl sulfoxide in the human brain by in vivo proton
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