



ACTIVE+ PRO Ingredients

Proprietary Joint Health Support Blend

MSM, first discovered in the late 1970's by researchers at Oregon State Sciences University in Portland, is a metabolite of DMSO (dimethyl sulfoxide). DMSO is a unique therapeutic agent used worldwide in the treatment of many painful and inflammatory conditions. MSM has many of DMSO's properties, but without the oyster-like odor and other side effects.

MSM plays a crucial role in forming muscles as well as building healthy cells. Research shows MSM is necessary for maintaining the health of connective tissue and is also beneficial in maintaining healthy collagen, which bonds tissues together. Collagen is necessary for maintaining the strength of cartilage, tendons and ligaments. MSM has been found to support joint mobility and when combined with Glucosamine Sulfate, offers a powerful formula for joint health.

MSM helps our bodies absorb more nutrients (vitamins and minerals). A lot of the vitamins we take go through the body without being fully used. With more MSM in the body, vitamins can be utilized more effectively and therefore become much more beneficial.

Researcher Robert Herschler has indicated that MSM levels in humans decline with age, resulting in symptoms of fatigue, tissue and organ malfunction, and increased susceptibility to disease.¹ In a study conducted with 118 patients the average pain score dropped by 79% when MSM was combined with glucosamine. The researchers also found that the combination therapy has a faster effect on pain and inflammation than either glucosamine or MSM alone.² A double blind study of MSM use in degenerative arthritis by R.M. Lawrence, M.D., Ph.D. at the U.C.L.A. School of Medicine was performed in 1997. The study indicated that a better than 80% control of pain within 6 weeks for those using MSM.³ Another MSM study at the UCLA Medical center by R. M. Lawrence, M.D., Ph.D., D. Sanchez, D.C., C.C.S.P., and Mark Grosman, D.C. evaluated twenty-four subjects (both male and female) seen in a clinical office setting. The subjects suffered from acute injuries (under 30 days) sustained during the course of athletic endeavor. The results indicated a 58.3% symptom reduction on MSM and the patients on MSM had 40% fewer visits to the doctor before reaching a recovery phase and their recovery was rated better. This represents a sizeable economic advantage, as well as less time in pain.⁴

References

1-Jacob, Stanley, and Robert Herschler. *Pharmacology of DMSO: Cryobiology*, 1986

2 - Usha PR, Naidu MU. Randomized, double-blind, parallel, placebo-controlled study of oral glucosamine, methylsulfonylmethane and their combination in osteoarthritis. *Clinical Drug Investigation*. 2004 Jun; 24(6): 353-63. Available at <http://www.msm.com/PDF/DegenerativeArthritisStudy.pdf> Accessed 9-13-04.

3- Lawrence, R.M. "Methylsulfonylmethane (MSM): A double-blind study of its use in Degenerative arthritis." *International Journal of Anti-Aging Medicine*, Summer 1998, 1 (1):50.

4 - Lawrence, R.M, Sanchez D, Grosman M. *Lignisul MSM (Methylsulfonylmethane) in the treatment of acute athletic injuries*. UCLA Medical Archives

Glucosamine (NON-Shellfish) is a natural substance produced by the body and found primarily in joint cartilage, where it is thought to play an important role in maintaining joint health and resilience.

Glucosamine is a compound found naturally in the body, made from glucose and the amino acid glutamine. Glucosamine is needed to produce glycosaminoglycan, a molecule used in the formation and repair of cartilage and other body tissues.

Chondroitin is a component of human connective tissues that are found in joint cartilage and bone. Chondroitin sulfate, a form of chondroitin, blocks destructive enzymes that break down cartilage in the joint. When injury occurs the destructive enzymes that reside naturally in joints multiply. According to the Arthritis Foundation, chondroitin is believed to support shock-absorbing characteristics of collagen and block enzymes that break down cartilage. It may help cartilage retain water and when used together with glucosamine, chondroitin helps maintain healthy cartilage.

Proprietary Proteolytic Enzyme Blend

Serrazimes® (serrapeptidase), is the key proprietary systemic enzyme within the ACTIVE+ PRO formula. Serrazimes®, a multi-functional proteolytic enzyme that dissolves non-living tissues such as fibrin and inflammation in all forms, without harming living tissue. This fungus-based digestive enzyme, secreted along the digestive tract to break food down into nutrients and waste, can tolerate the high acidity of the stomach better so more of the enzymes make their way into the circulatory system. This allows nutrients to be absorbed into the blood stream. In addition, the exchange of nutrients and oxygen in your body will be limited, therefore an increase in pain and inflammation. If the area in question is slow to heal, an excess of fibrin will appear as clumps of scar tissue in the muscle or at the surgical site.

The striking quality of serrapeptidase is its profound ability to reduce pain, by blocking the release of pain inducing amines. In a scientific double-blind study where serrapeptidase was supplemented, good to excellent improvement was reported in more than 60% of the subjects taking serrapeptidase. Pain was reduced in 63% of cases and fluid buildup reduced in 56% (1). Clinical research studies have shown that serrapeptidase promotes anti-inflammatory activity, anti-endemic (the lessening of fluid retention) and fibrinolytic activity (the dissolution of protein buildups). Serrapeptidase has been found to be effective against arthritis, injury swelling and inflammation. In sports related injuries specific to post-operative swelling, serrapeptidase was shown to increase the healing process and recovery time. A recent study has promoted that the increase time post-operative, increased by 50% (2).

References

1. *Minerva Cardioangiol*, Vol #10, Oct. 1996, 515-24.
2. Esch, PM, et al. *Fortschr Med*. 1989 Feb 10; 107(4):67-8, 71-2.

Bromelain is a mixture of enzymes found naturally in the juice and stems of pineapples. Called a proteolytic enzyme, bromelain is believed to help with the digestion of protein. Some bromelain appears to be absorbed by the body intact, so it's also thought to have effects outside the digestive tract. Studies show a decrease in pro inflammatory enzymes with oral bromelain use. Bromelain treatment decreases secretion of pro inflammatory cytoleins and chemolines by colon biopsies in vitro. Pro inflammatory enzymes lead to joint, muscle pain and inflammation, which can promote injuries or certainly delay the healing process (3).

References

3. Onken, JE, Green PK, Calingaert B, Hale LP. *Clin Immunol*, 2008 March; 126(3): 345-52 Epub 2007, Dec. 21.

Papain is derived from papaya. This is a plant native to Mexico and Central America and contains the enzyme papain, which is a digestive enzyme. Enzymes help to speed up chemical reactions in the body and are very useful in helping to aid protein digestion. Under clinical conditions papain produced therapeutic effects in patients with inflammatory disorders in the intestines, liver and eyes and increased recovery time in athletes and post surgical treatments (4). Papain can also work wonders for sports injuries such as bruising and swelling because of its ability to reduce swelling and thin mucous.

References

4. Rakhimov MR., *Eksp Klin, Farmakol*, 2000 May-June: 63(3):55-7.

Recovery and Repair

L-glutamine is the most abundant amino acid in the body, and is useful for many functions. When our body decreases the production of this element, a glutamine supplement can be taken and is a very popular health product used to improve muscle recovery after strenuous activities. It is released from the muscle during times of stress (such as hard weight training workouts or athletic activity). This amino acid has been shown to be a great anti-catabolic agent, a contributor to muscle cell volume, and to have immune system enhancing properties. Loss of muscle mass and impaired immune function are related to reduced protein supply, and there is increasing evidence that regular essential amino acid intake as part of an oral diet is effective in reversing muscle catabolism, promoting muscle anabolism, and restoring immunological function (5).

Athletes in many sports have used glutamine supplementation to build muscles, as it is known to increase muscle bulk thereby enhancing their performance. Research has shown that glutamine has important implications for athletes engaged in intensive exercise training (6). Glutamine supplementation has shown an increase in growth hormone levels, promotes glycogen formation, promotes protein synthesis, protects the immune system and has anti-catabolic properties. All evidence seems to indicate that glutamine can possibly favor recovery in all these ways. A study in marathon runners and athletes involved in intense anaerobic activity promoted that the athletes who supplemented with glutamine were twice as likely to stay healthy for one week following the strenuous activity, and twice as likely to recover faster in a three day post-workout period (7). Glutamine also increases the production of glutathione, the most powerful antioxidant in the body. Glutathione in turn protects tissue from oxidative damage and detoxifies harmful substances such as free radicals leading to an increased immune function.

References

5. *Clinical use of amino acids as dietary supplement: pros and cons.* Dioguardi FS. *J Cachex Sarcopenia Muscle.* 2011 Jun;2(2):75-80. Epub 2011 Jun 11.
6. Antonio J, Street C. 1999, *Glutamine: A potentially useful supplement for athletes.* *Canadian Journal of Applied Physiology* 24(1):1-14.
7. Castell, LM, Newsholme EA, 1997. *The effects of oral glutamine supplementation on athletes after prolonged, exhaustive exercise.* *Oxford University, Nutrition* 13, 738-42.

Mineral Blend

Calcium carbonate is a mineral used to help prevent the bone loss that occurs in osteoporosis. When using calcium supplements, it's important to remember that Vitamin D is essential in assisting with the absorption of calcium so that you will achieve the maximum benefit of your supplementation.

Manganese is a mineral found in trace amounts in the human body, mostly in the bones, liver, pancreas and kidneys. Manganese is important for production of enzymes and antioxidants that fight free radical damage. Manganese is also necessary for nervous system function.

Vitamin

Vitamin D is a fat-soluble vitamin that's formed when skin is exposed to the sun's ultraviolet rays. The main function of vitamin D is to maintain normal levels of calcium and phosphorus in the blood to support bone mineralization (hardening of bones), cell functions, and proper nerve and muscle function. Vitamin D3, (cholecalciferol) is the preferred form and acts as a hormone, enhancing the absorption of calcium and phosphorus in the small intestine.