



ACTIVE IM Ingredients

Proprietary Healthy Anti-Inflammation Response, Joint Support, Muscle Recovery and Proteolytic Digestive Enzyme Blend

Methylsulfonylmethane (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 health and mobility. 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 athletic endeavors. 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 Sulfate 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 Sulfate 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.

Boswellia, also known as Indian Frankincense, is an herbal extract taken from the *Boswellia serrata* tree. Studies show that boswellia may reduce inflammation and may be useful in treating: osteoarthritis, rheumatoid arthritis (RA), asthma and inflammatory bowel disease. Besides being an effective anti-inflammatory, boswellia can be an effective painkiller and may prevent the loss of cartilage. Some studies show that boswellic acid can prevent the formation of leukotrienes in the body. Leukotrienes have been identified as a cause of inflammation and may trigger asthma symptoms. Four acids in boswellia resin contribute to the herb's anti-inflammatory properties.

Sources

Chatterjee GK, Pal SD. Anti-inflammatory agents from Indian medicinal plants. *Indian Drugs*. 1984;21:431.
Kirtikar KR, Basu BD. The anti-inflammatory action of Indian medicinal plants. *Indian Med Plants*. 1935;1:521-9.
M. Z. Siddiqui. *Boswellia Serrata, A Potential Anti-inflammatory Agent: An Overview*. *Indian J Pharm Sci*. 2011 May-Jun; 73(3): 255-261.

Ginger is an herb and is a rhizome (underground stem). As a medicine, ginger is commonly used to treat various types of "stomach problems," including motion sickness, morning sickness, colic, upset stomach, gas, diarrhea, nausea caused by cancer treatment, nausea and vomiting after surgery, as well as loss of appetite. Other uses include pain relief from arthritis or muscle soreness, menstrual pain, upper respiratory tract infections, cough, and bronchitis. Ginger is also sometimes used for chest pain, low back pain, and stomach pain. Ginger contains chemicals that may reduce nausea and inflammation.

Sources

Grzanna R, Lindmark L, Frondoza CG. *J Med Food*. 2005 Summer;8(2):125-32.
Grzanna R, Phan P, Polotsky A, Lindmark L, Frondoza CG. *J Altern Complement Med*. 2004 Dec;10(6):1009-13.
Thomson M, Al Qattan KK, Al Sawan SM, et al. The use of ginger (*Zingiber officinale* Rosc.) as a potential anti-inflammatory and antithrombotic agent. *Prostaglandins Leukot Essent Fatty Acids*. 2002;67(6):475-478.

Turmeric is a plant. You probably know turmeric as the main spice in curry however the root of turmeric is also used widely to make medicine. Turmeric is used for arthritis, heartburn (dyspepsia), stomach pain, diarrhea, intestinal gas, stomach bloating, loss of appetite, jaundice, liver problems and gallbladder disorders. It is also used for headaches, bronchitis, colds, lung infections, fibromyalgia, leprosy, fever, menstrual problems, and cancer.

Sources

Davis JM, Murphy EA, Carmichael MD, Zielinski MR, Groschwitz CM, Brown AS, Ghaffar A, Mayer EP. Curcumin effects on inflammation and performance recovery following eccentric exercise-induced muscle damage. *Am J Physiol Regul Integr Comp Physiol*. 2007 Mar 1
Jaquetia GC, Aggarwal BB. "Spicing up" of the immune system by curcumin. *J Clin Immunol*. 2007;27:19-35.
Shehzad A, Rehman G, Lee YS. Curcumin in inflammatory diseases. *Biofactors*. 2013; 39:69-77.

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.*

Betaine HCL increases the level of hydrochloric acid in the stomach necessary for proper digestion and assimilation of nutrients from food. Normal levels of hydrochloric acid are required for complete digestion of proteins and absorption of amino acids. It's also required for the extraction of vitamin B12 from food. Betaine HCL helps to restore the proper acid levels in the stomach and maintain healthy GI function. Betaine HCL helps make some minerals and other nutrients more absorbable.^{1,2}

References

1. *Murray MJ, Stein N. A gastric factor promoting iron absorption. Lancet 1968;1:614.*
2. *Russell RM, Krasinski SD, Samloff IM. Correction of impaired folic acid (Pte Glu) absorption by orally administered HCl in subjects with gastric atrophy. Am J Clin Nutr 1984;39:656.*

Serrazimes® (serrapeptidase), is a systemic enzyme contained within the ACTIVE IM formula. This key component is 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-edemic (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).

Reference

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.

Reference

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

Vitamin Blend

Vitamin B12 (*Cyanocobalamin*) is a vitamin and it can be found in foods such as meat, fish, and dairy products. Vitamin B12 is frequently used in combination with other B vitamins and is required for the proper function and development of the brain, nerves, blood cells, and many other parts of the body. Vitamin B12 is used for treating and preventing vitamin B12 deficiency, a condition in which vitamin B12 levels in the blood are too low. Vitamin B12 is also used for memory loss; boosting mood, energy, concentration and the immune system; and slowing aging. It is also used for heart disease, lowering high homocysteine levels (which may contribute to heart disease), male infertility, diabetes, sleep disorders, depression, mental disorders, weak bones (osteoporosis), swollen tendons, asthma, allergies, preventing cervical and other cancers, and skin infections.

Vitamin C (*Ascorbic Acid*) is a vitamin and sourced primary from fresh fruits and vegetables, especially citrus fruits. Vitamin C is used most often for preventing and treating the common cold. There is some thought that vitamin C might help the heart and blood vessels. Uses of vitamin C may include: gum disease, acne and other skin infections, bronchitis, human immunodeficiency virus (HIV) disease, stomach ulcers caused by bacteria called *Helicobacter pylori*, tuberculosis and dysentery (an infection of the lower intestine. It is also used for infections of the bladder and prostate. Additionally, vitamin C is taken for depression, thinking problems, dementia, physical and mental stress, fatigue and to increase the absorption of iron from foods.

Vitamin D (*Cholecalciferol*) 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, is the preferred form and acts as a hormone, enhancing the absorption of calcium and phosphorus in the small intestine.

Niacin (*Nicotonic Acid*) is a type of B vitamin. It is water-soluble, which means it is not stored in the body. Water-soluble vitamins dissolve in water. Niacin helps the digestive system, skin, and nerves to function. It is also important for converting food to energy.

Mineral Blend

Calcium (*Calcium Citrate*) plays a very important role in the body. It is necessary for normal functioning of nerves, cells, muscle, and bone. If there is not enough calcium in the blood, then the body will take calcium from bones, thereby weakening them, which may increase the risk of osteoporosis. Calcium is best absorbed in an acidic environment, so calcium citrate is the best-absorbed supplemental form of calcium. 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.

Copper (*Copper Citrate*) is an essential trace mineral that is derived from corn dextrose fermentation. Present in all body tissues; copper which plays a role in the formation of connective tissue, and in the normal functioning of muscles and the immune and nervous systems. Copper also influences the functioning of the heart and arteries, helps prevent bone defects such as osteoporosis and osteoarthritis, and promotes healthy connective tissues (hair, skin, nails, tendons, ligaments and blood vessels).

Magnesium (*Magnesium Glycinate*) is a mineral supplement used to prevent and treat low amounts of magnesium in the blood. Magnesium is very important for the normal functioning of cells, nerves, muscles, bones, and the heart. Usually, a well-balanced diet provides normal blood levels of magnesium. However, certain situations cause your body to lose magnesium faster than you can replace it from your diet. These situations include treatment with diuretics such as a poor diet, alcoholism, or other medical conditions.

Manganese (*Manganese Citrate*) 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.

Molybdenum is classified more as a metallic element than a mineral. Found abundantly in nature from nitrogen-fixing bacteria it is essential in trace amounts for human, animal and plant health. The main known function of molybdenum in humans is to act as a catalyst for enzymes and to help facilitate the breakdown of certain amino acids in the body. Molybdenum combines with sulfite oxidase to catalyze sulfur-containing amino acids that are crucial for human health.

Selenium is a mineral. It is taken into the body in water and foods. Used it as medicine for diseases of the heart and blood vessels, including stroke and “hardening of the arteries” (atherosclerosis). It is also used for preventing various cancers including cancer of the prostate, stomach, lung, and skin. Additionally, selenium uses may include; under-active thyroid, osteoarthritis and rheumatoid arthritis (RA). Selenium is important for making many body processes work correctly. It seems to increase the action of antioxidants and plays a key role in the metabolism.

Zinc (*Zinc Citrate*), called an “essential trace element” because very small amounts of zinc are necessary for human health. Zinc is needed for the proper growth, maintenance of the human body and boosting the immune system. Uses of zinc may include; benign prostatic hyperplasia (BPH), male infertility, erectile dysfunction (ED), weak bones (osteoporosis), rheumatoid arthritis, and muscle cramps associated with liver disease. Athletes have used zinc for improving athletic performance and strength.