MSM Bioavailable Sulfur 1000 mg
Product Code: P2120
Categories: Joint Support

TECHNICAL SUMMARY

Chemical Name: Methylsulfonylmethane or Dimethyl sulphone
Structural Formula:

\[
\begin{align*}
\text{H}_3\text{C} & \quad \quad \text{S} & \quad \quad \text{CH}_3 \\
\end{align*}
\]

Molecular Formula: C2-H6-O2-S
Product Composition: MSM (methylsulfonylmethane), Gelatin (capsule), Stearic Acid and Magnesium Stearate
Delivery Form: Capsules

ROLE AS A NUTRIENT

Essentiality: MSM is not considered an essential nutrient. MSM is an organic form of sulfur (contains 34% elemental sulfur). Sulfur is essential in human nutrition. However, main sources of sulfur in the diet are sulfur-containing amino-acids.¹

Dietary Sources: MSM is found in various foods, especially those originating from soil. These include vegetables, grains, fruit, coffee, and beer. However, cow’s milk is the most abundant source of MSM. DMSO (dimethylsulfoxide), abundant in the plant material, also serves as a precursor of MSM.¹

Typical Consumption: Unknown.
Prevalence of Nutrient Deficiency: Sulfur deficiency occurs rarely in humans and is mostly associated with consumption of a diet low in animal proteins.²

Factors Affecting Nutrient Status: Since MSM is naturally and readily available in foods, processes that decrease food quality may also decrease levels of MSM present in food. Over-consumption of processed foods may likely lead to insufficient levels of MSM in the body.

Methods of Evaluation: MSM levels may be determined in plasma.³

Structural and Functional Role: MSM is a source of sulfur, which plays a role in cartilage formation. It also acts as a methyl donor and is used by the body to maintain connective tissues through its ability to stabilize cell membranes, slow or stop leakage from injured cells, and scavenge hydroxyl free radicals, which may trigger inflammation. Through its effects on the cell membrane, MSM is considered to be an anti-inflammatory agent.¹,³,⁴

RECOMMENDED USE

Joint Support: In a randomized, placebo-controlled study, 50 volunteers aged 40-76 years with osteoarthritis of the knee were administered 3 grams of MSM or placebo twice a day for 12 weeks. Efficacy and safety were tested by measuring pain, stiffness, disease status, and overall well-being through the utilization of WOMAC scores and SF-36 (overall health-related quality of life questionnaire). As compared with placebo, MSM produced significant decreases in WOMAC pain and physical function impairment (p<0.05). MSM also produced improvement in performing daily living activities when compared with placebo on the SF-36 evaluation (p<0.05).³
NATUROKINETICS℠

**Liberation:** Dissolution data is not available. MSM Bio-Available Sulfur 1000 mg capsules pass the standard disintegration test in water (< 60 minutes).

**Absorption:** MSM is a small, water-soluble molecule that is easily absorbed, primarily in the small intestine. Serum level of MSM in humans has been measured following administration of DMSO, which is known to convert into MSM in the body (Figure 1). Distribution: MSM has been confirmed to cross the blood-brain barrier and can be found in cerebrospinal fluid, the brain, as well as in connective tissue and plasma. Metabolism: Metabolic fate of MSM in the body includes its role as a source of sulfur and as a methyl group donor. Unlike DMSO, MSM is not metabolized into dimethyl sulfide (DMS) which is responsible for the garlic-like odor associated with DMSO administration. Excretion: In a pharmacokinetic study utilizing Rhesus monkeys, MSM was found to persist in the blood five times longer than DMSO, with estimated half-life ($t_{1/2}$) of approximately 38 hours.1,6

**SAFETY INFORMATION**

**Tolerability:** MSM is generally well-tolerated at typical doses of 1-6 grams/day. Some of the adverse effects may include bloating, indigestion, headaches, and insomnia. Doses of up to 18 grams daily have been used safely for a limited time (2 weeks) under medical supervision. Contraindications: No known contraindications.

**INTERACTIONS**

**Drug Interactions:** There are no known interactions with drugs.

**Supplement Interactions:** There are no known interactions with other herbs or supplements.

**Interaction with Lab Tests:** There are no known interactions with lab tests.

**Storage/Stability:** Store in a cool dry place.

**References**