

## Supplement Sampler

### Methyl Sulfonyl Methane (MSM)

#### Best Indications

- Osteoarthritis
- Limited evidence of benefit in allergic rhinitis

#### Mechanism of Action

- Donates sulfur to cysteine and methionine. Seems to reduce homocysteine levels.
- Thought to protect joints via inhibition of degeneration.
- Crosses the blood-brain barrier.
- Does NOT decrease ESR or CRP, but does have an effect on free radical production by neutrophils.
- Reduces negative effects of LDL *in vitro*.
- Causes untwisting of DNA to allow additional gene transcription. Like aspirin, can stop cell differentiation (slow tumors). Slows colon and breast cancer onset in rats.
- Sulfur-containing compounds like MSM, which provide our bodies with sulfur, start out as plankton byproducts which react in the ocean to form gases. The gases are converted in the atmosphere via UV rays and ozone into dimethylsulfoxide (DMSO) or MSM, which fall in rainwater and are absorbed by plants that pass them on up the food chain. For the record, there is no RDA for sulfur if patients who read about 'sulfur deficiency' ask.

#### Best Study

An RCT involving 50 men and women from 40-76 years old with osteoarthritis knee pain were given either 3 grams of MSM or placebo twice daily for 12 weeks. Compared to placebo, MSM produced significantly decreased WOMAC pain and physical function impairment scores but did not significantly affect stiffness or aggregated total symptoms. It did provide improvement in overall performance on the SF-36 evaluation of activities of daily living ( $P < 0.05$ ). No side effects were noted. *Kim LS, et al., Osteoarthritis Cartilage, 2006 Mar;14(3):286-94.*

#### Dose

500-1000 mg tid are commonly used, but some will use doses as high as 18 grams.

#### Side Effects

Similar to placebo. Rare pruritus and allergy symptoms in some patients.

#### Cost

Variable. Approximately \$20-30 for a months' supply.



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### **Comments**

MSM is found in tomatoes, Swiss chard, and corn in low levels. Also found in coffee, beer, tea, and (at relatively high levels) in cow's milk. Bearing the latter foods in mind, one may find it easy to encourage people to increase MSM intake through diet.

*The Miracle of MSM: The Natural Solution for Pain* got this supplement a lot of press, but evidence supporting MSM's use for most forms of pain management is quite limited.

### **Clinical Bottom Line**

MSM frequently is mixed in with glucosamine and chondroitin. Its safety profile makes it worth trying in osteoarthritis, particularly in patients who favor supplement use over the use of pharmaceuticals. For more on osteoarthritis and Integrative Medicine, see

<http://www.fammed.wisc.edu/integrative/modules/osteoarthritis>.

*Brought to you by your colleagues in the UW Department of Family Medicine Integrative Medicine Program.*

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