
# SAM-e

(*S-Adenosylmethionine*)

Stock #1845-2 (30 tablets)

SAM-e is a natural substance found throughout the body that is synthesized from the amino acid methionine (with the help of folic acid and vitamin $B_{12}$). Tissue levels of SAM-e are typically low in the elderly and in individuals suffering from depression, osteoarthritis and various liver disorders. Not surprisingly, SAM-e has been credited with slowing and even reversing the progression of osteoarthritis, relieving depression, and decreasing alcohol-induced liver damage. In fact, SAM-e has been used as a prescription drug in Europe for over 20 years for both depression and osteoarthritis, and preliminary research shows that SAM-e may provide beneficial effects for fibromyalgia. European studies involving over 20,000 people have shown SAM-e to have few, if any, serious side effects and virtually no toxicity. Thus far, SAM-e has been shown to be one of the safest treatments currently available for osteoarthritis and depression, as well as certain types of heart and liver disease.[1-9]

Osteoarthritis (OA) is the 3rd most common disease treated by family practitioners, affecting slightly more women than men. OA-affected joints suffer an increasing limitation of movement, loss of dexterity, and increasing pain or “deep ache.“ Both stiffness and pain can worsen with changes in the weather (i.e. cold, damp weather). OA-affected joints are not usually visibly inflamed, although there may be swelling, particularly in the finger joints. Research shows that SAM-e not only improves mobility and relieves OA pain (providing both anti-inflammatory and analgesic (pain-relieving) effects, but in addition, it appears to fortify and even help rebuild damaged cartilage. SAM-e works by enhancing proteoglycan production—proteoglycan lines the outside of the collagen surrounding the joint and serves to hold water, which, in conjunction with the collagen, acts as a cushion in the cartilage.[1,6,9,10]

The largest human study of SAM-e involved over 20,000 patients with OA of the knee, hip and spine. After 8 weeks of supplementation (1,200mg daily the first week, 800mg daily the second week, and 400mg daily thereafter), 71% reported “good“ or “very good“ results and another 21% reported "moderate“ benefits. Tolerance of SAM-e was assessed as “very good“ or “good“ in nearly 90% of the participants. Another study, which followed 108 patients for 2 years (receiving 600mg daily the first two weeks and 400mg daily thereafter), reported that all patients experienced a significant decrease in both morning stiffness and pain at rest and at motion. In addition, patients who had also been suffering from depression found relief from these symptoms as well.[1,3,5,6,11,12]

Numerous studies have shown the effects of SAM-e to be comparable with those achieved using NSAIDs (non-steroidal anti-inflammatory drugs). When compared with *naproxen* (an NSAID), both groups showed a marked improvement; however, those receiving SAM-e experienced less gastrointestinal disturbance. SAM-e has also been shown to be equally effective as the drugs *ibuprofen*, *indomethacin* and *piroxicam*. Incidentally, patients taking SAM-e maintained clinical improvement longer than those receiving piroxicam. Even more importantly, SAM-e demonstrated an ability to facilitate cartilage growth, while NSAIDs have been shown to contribute to cartilage deterioration by inhibiting cartilage repair and accelerating bone loss. In addition, one of the most significant side effects associated with NSAIDs is gastrointestinal ulceration, bleeding and perforation. Fortunately, research thus far has shown SAM-e to have no toxic potential for kidney, liver or other organ damage. In fact, SAM-e may actually help protect the gastric mucosa.[1,5,6,9,13-15]

Although the neurophysiological effects of SAM-e are not as pronounced as its effects on joint physiology, SAM-e does play a significant role in the production of important brain compounds, including the neurotransmitters dopamine, norepinephrine and serotonin (which are known to play a role in depression). SAM-e also improves the binding of neurotransmitters to receptor sites, thus enhancing tissue levels in the brain and increasing activity, which results in significant clinical improvement. Patients taking oral SAM-e have demonstrated marked increases in the level of SAM-e in their cerebrospinal fluid, indicating that SAM-e is capable of crossing the blood-brain barrier to be utilized by the brain.[1,4,5,16,17]

SAM-e is the major methyl donor in the body. Without methyl molecules being donated, neurotransmitters cannot operate effectively, which can lead to depression. Researchers have verified that SAM-e is the chief methyl donor in dopamine metabolism. Just as dopamine depletion and reduced dopamine transit are linked with depression, low plasma levels of SAM-e have also been associated with depression and other psychological and neurological disorders. In fact, SAM-e levels have been found to be significantly decreased in individuals diagnosed with severe depression.[1,2,5,6,17]

A review of multiple controlled studies of depression found that SAM-e provides antidepressant effects comparable to

that of tricyclic antidepressants, with fewer side effects than standard pharmaceutical treatment. Not only is SAM-e better tolerated, but it also provides a faster onset of antidepressant action than tricyclics. In addition, SAM-e may even be helpful for patients who cannot tolerate tricyclic antidepressants. Interestingly, a recent study comparing the effects of SAM-e against *desipramine* suggests that one of the ways tricyclic drugs exert antidepressive effects may actually be by increasing levels of SAM-e.[1,4-6,18-21]

Currently, few therapeutic agents are available that effectively relieve symptoms of liver disorders such as cirrhosis, hepatitis and drug-induced liver damage. Fortunately, initial research suggests that SAM-e may prove to be a viable treatment option for patients with liver dysfunction. For example, a two-year, double-blind, placebo-controlled study of 123 individuals with alcoholic cirrhosis showed that SAM-e (1,200mg daily) improved survival or delayed liver transplantation, particularly those with less advanced liver disease. Incidentally, the liver contains the third highest amount of SAM-e in the body.[6,22,23]

When considering supplementation with SAM-e, it is important to choose a quality brand. Since SAM-e is an active molecule, if it is not enteric-coated it may actually begin to break down prematurely in the bottle, producing a rancid odor. For optimum absorption, SAM-e should be taken on an empty stomach. Furthermore, adequate intake of folic acid and vitamin $B_{12}$are also recommended, as insufficient levels of B-vitamins could cause SAM-e to be converted to homocysteine—an amino acid derivative associated with heart disease.[1,3,6,24]

SAM-e has been reported to have no significant side effects other than occasional nausea and gastrointestinal disturbance. However, individuals with bipolar (manic) depression should not take SAM-e unless under medical supervision, as the antidepressant effects of SAM-e could lead to a manic phase in some individuals.[3,5,6]

NSP's SAM-e contains 200mg of SAM-e in each enteric coated tablet. The enteric coating prevents SAM-e from prematurely breaking down in the bottle, and also provides for optimal absorption of SAM-e in the small intestine. NSP's SAM-e contains no artificial colors or sodium lauryl sulfate—a common ingredient found in other SAM-e supplements.

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