

Methionine and S-adenosyl-methionine (SAM)

What does the body use methionine for?

- To make cysteine and taurine
- To make encephalins and endorphins (natural pain-killers)
- To metabolize homocysteine and serine
- Combines with toxins to allow them to be eliminated
- Helps to remove excess oestrogen, adrenaline, histamine and related substances

Methionine is one of the sulphur amino acids. It cannot be synthesized by the human body, and must be obtained from the diet. It is vital for the synthesis of other sulphur amino acids (cysteine and taurine), and donates sulphur and other compounds required for the body to make many other substances. Without a sufficient daily intake of methionine the body cannot produce adequate adrenaline and other hormones.

Methionine is a component of the body's natural painkillers enkephalin and endorphin, and has sometimes been used as a painkilling treatment. It is also essential in regulating the availability of folic acid. A methionine-deficient diet can cause folic acid deficiency as this B vitamin becomes trapped in the liver in an inactive form.

Along with vitamin B6, methionine is essential for the metabolism of homocysteine. If allowed to build up in the blood, homocysteine can encourage a harmful build-up of cholesterol deposits in arteries.

In the brain, methionine is metabolized to s-adenosyl-methionine (SAM), sometimes known as "activated" methionine. SAM provides methyl groups for breaking down excessive adrenaline and for the synthesis of a host of important biological compounds, including betaine, carnitine, choline, creatine, adrenal hormones, melatonin and nucleic acids. SAM is also an important component of joint tissue, and supplements have been used to combat osteoarthritis.

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What foods is it found in?

- Brazil nuts
- Meat, fish
- Sunflower and sesame seeds
- Dairy products
- Oats

Vegans should take special care to obtain enough methionine. Beans and most soya products are poor sources of this amino acid.

Useful information

Environmental medicine expert Dr William Rea says that in people with degenerative diseases, mental illness or food and chemical allergies, methionine is the most disrupted of all their body's amino acids¹.

In order to metabolize (use) methionine, the body requires adequate amounts of B vitamins (especially folic acid and B12), magnesium and serine. If a diet high in methionine is consumed but the methionine is not properly metabolized due to a lack of B vitamins, there is a risk of homocysteine levels rising, which can lead to high cholesterol and osteoporosis as well as poor liver detoxification. Symptoms of poor detoxification are many and varied, and include headaches and chronic fatigue. Psychiatric and nervous system problems can also develop when insufficient methionine is converted to SAM.

Studies on rats suggest that methionine supplementation may be able to increase levels of adrenal hormones in the body. This may be one reason why Dr Eric Braverman, formerly of the Brain Bio Center in New Jersey, and author of the *Healing Nutrients Within*, describes methionine as a good allergy fighter. The body tries to combat allergic inflammation by producing adrenal hormones such as cortisol. The other reason is methionine's ability to reduce high levels of histamine—a substance responsible for allergic inflammation and swellings.

Researchers have also used SAM supplements against

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parkinsonism and clinical depression^{2,3,7} and claim to obtain results comparable to those of conventional treatments^{3,8,9}. One of the researchers describes SAM as a very effective antidepressant, with a more rapid therapeutic effect than that of standard tricyclic antidepressants, which makes it very beneficial for those in a catatonic state or those with acute suicidal thoughts⁸. SAM is needed for the vital process of converting L-dopa to dopamine and is often depleted in patients with Parkinson's disease.

The Brain Bio Center in the USA uses methionine to treat one type of schizophrenia, classified as the "high histamine" type, which is associated with severe depression and suicidal tendencies. The Brain Bio Center believes that L-methionine alleviates depression by lowering blood histamine⁴. Others (using SAM supplements) believe it may work by increasing the turnover of the mood-governing substances noradrenaline, dopamine and serotonin⁵. In some cases of depression it has been described as having an efficacy equal to that of conventional drugs⁵. On the other hand excessive supplementation with methionine can aggravate psychotic symptoms in other types of schizophrenia where individuals suffer from folic acid deficiency⁴.

Many drugs used in psychiatric medicine work by keeping up the body's levels of adrenal hormones. It is not surprising that similar effects can be achieved by increasing consumption of the raw materials which the body uses to make these hormones.

Other benefits of methionine supplementation (in the form of SAM) include

- Increasing the body's production of phosphatidylcholine⁵, which can improve the flexibility of red blood cells, helping them squeeze through narrow capillaries and supply more oxygen to tissues,
- Enhancing the synthesis of cartilage-building proteoglycans in people with osteoarthritis. SAM has been evaluated in more than 22,000 osteoarthritis patients, and their symptoms usually improve after two weeks of supplementation⁵,
- Improving fatigue and reducing liver enzymes in a variety of chronic liver diseases⁵,
- Improving pain and morning stiffness in patients with

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fibromyalgia (muscle pain associated with chronic fatigue syndrome)⁵,

- Improving mental function, mood and speed of mental processing in patients with Alzheimer's disease⁶.

SUPPLEMENTS

How to use methionine supplements

The suggested dosage of SAM is 200-800 mg am and pm, with a maintenance dose of 200 mg per day once the maximum improvement has been obtained.

How safe are methionine supplements?

Researchers have used up to 5 grams a day of L-methionine against parkinsonism, and up to 2 grams a day against pancreatitis.

SAM supplements may worsen Parkinson's disease, whereas this problem does not seem to occur with normal L-methionine supplements. SAM supplements sometimes cause digestive discomfort such as nausea, vomiting and dry mouth^{5,8}.