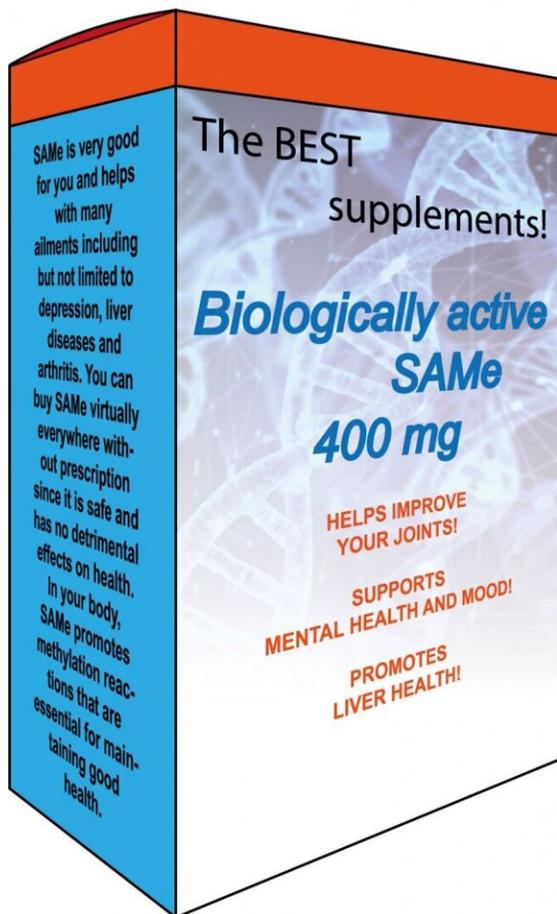


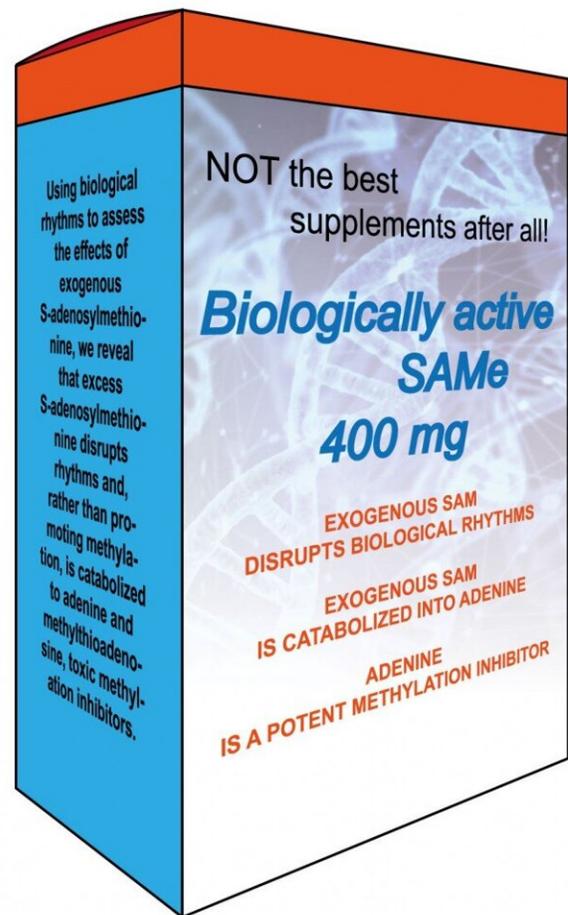
Common supplement S_{AM}e could be toxic, scientists warn

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What manufacturers say



What we show



Credit: University of Manchester

A dietary supplement sold over the counter could be toxic and should not be used until it is shown to be safe, biologists from the Universities of Manchester and Kyoto have discovered.

Sellers of the supplement, known as SAME, which is short for S-adenosylmethionine, claim it can help a range of conditions including joints and liver diseases, and promote emotional well-being.

However Manchester's Dr. Jean Michel Fustin says it disrupts the [biological clock](#) in the body because it is broken down into adenine and methylthioadenosine—known [toxic substances](#) that cause a wide range of other problems, including kidney and liver damage.

The study of mice was published in *Communications Biology*.

Dr. Fustin and co-workers unexpectedly discovered the impact of this supplement when he was studying how the biological clock in mice is influenced by different compounds.

With SAME, they were attempting to promote SAME-related metabolism of the animals, though they were surprised to find an opposite inhibitive effect.

SAME-related metabolism is very ancient, and critical for the biological clock in human and plant cells, worms, fruit flies and even bacteria.

"This worrying effect of SAME on the body clock in mice strongly suggested it will be toxic in human as well, which we actually confirmed in [human cells](#)" said Dr. Fustin.

"The [health benefits](#) that manufacturers claim are questionable to say the very least. And because it's unclear what dose is safe, there is a good chance that a safe dose will be exceeded—if one exists at all.

"We should trust the amount of SAM our own body produces, unless there are clear clinical signs of deficiencies."

Adenine and methylthioadenosine inhibit [chemical reactions](#) called methylations that occurs in every cell and tissue in the body. SAME is required for these reactions, and it was expected that more SAME would promote methylations. But the opposite turned out to be true.

Disruptions to methylation processes have been linked to a variety of problems, including: heart attack, stroke, dementia, depression, migraines, autism, fertility, cancer, and birth defects.

He added: "Because of the accumulation of adenine and methylthioadenosine, the consequences of chronic excess SAME in the body are potentially very serious.

"I would advise the public to steer clear of SAME, at the very least until we understand more about its effect on [human health](#)."

Every human is controlled by an internal "body clock" which orchestrate our [circadian rhythms](#)—the natural internal processes regulating our physiology every 24-hours.

This internal clock controls most of our body processes over this period, including our sleep/wake cycles, digestion, metabolism, appetite and immunity.

More information: Kazuki Fukumoto et al, Excess S-adenosylmethionine inhibits methylation via catabolism to adenine, *Communications Biology* (2022). [DOI: 10.1038/s42003-022-03280-5](https://doi.org/10.1038/s42003-022-03280-5)

Provided by University of Manchester

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