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Taurine, a nutrient added to energy drinks, slows aging in animals — and maybe humans, too



Man spends millions to attempt to reverse aging

Bryan Johnson, 45, is using his life as a science experiment to see how lon...

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Taurine, an amino acid found in meat and shellfish, is a popular supplement added to energy drinks that are touted to promote sharper brain function. While those claims are unproven, new research suggests the nutrient may help with healthy aging.

Low levels of taurine can speed the aging process in several species of animals. Now scientists report that supplementing with the nutrient may slow that process down, leading to longer, healthier lives in animals — and maybe humans, too — an international group of [researchers reported Thursday](#) in *Science*.

“This is a really exciting time,” said study co-author Vijay Yadav, an assistant professor of genetics and development at the Vagelos College of Physicians and Surgeons, the medical school for Columbia University in New York City.

That’s because researchers are now exploring specific molecules, such as taurine, that might improve health and

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dramatically with age in mice, monkeys and humans. No one knows yet why levels of the nutrient decline as much as 80% with age, Yadav said.

In experiments with mice and monkeys, the researchers found that supplementing middle-age animals led to better health.

In mice, the supplementation led to less weight gain, increased bone density, improved muscle endurance and strength, reduced insulin resistance, a better-functioning immune system and a 10% longer lifespan, which in humans would be about seven or eight years.

In monkeys, supplementation prevented age-related weight gain, improved fasting blood sugar levels, increased bone density and led to healthier livers and improved immune system function.

Yadav was quick to point out that it doesn't look like supplementation is reversing the effects of aging.

"It's hitting the brakes on aging, not putting things in reverse gear," he said at a news briefing Tuesday.

While there haven't yet been trials in humans, data suggests that the findings in animals might be applicable.

Examining data from the University of Cambridge's [EPIC-Norfolk study](#) — which from 1993 to 1998 tracked health, diet and physical activity of 30,000 men and women ages 40 to 79 — the researchers found that, overall, people with higher taurine levels were healthier, had lower levels of inflammation and were less likely to have Type 2 diabetes or high blood pressure or to be obese.

Exercise may boost taurine

In another intriguing finding, the researchers discovered an association between the amount people exercise and their taurine levels. Scrutinizing data from the EPIC-Norfolk study, the researchers discovered that taurine levels rise with exercise.

The next step is to run a clinical trial to determine whether similar benefits can be seen when humans receive taurine supplements, Yadav said, adding that he couldn't recommend that people try to boost their taurine levels without such data.

mice to be safe, said Henning Wackerhage, a co-author of the study and a professor of exercise biology at the Technical University of Munich.

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Levels of taurine added to energy drinks would be safe, but Wackerhage expressed concern about the levels of caffeine in the beverages.



As for higher doses, Yadav said no one knows whether there would be safety issues.

Foods high in taurine

While the human body can make small amounts of taurine, an amino acid, people mostly get it through [food](#).

Shellfish, as well as dark chicken and turkey meat, contain the highest levels of taurine. Other meats contain moderate amounts of taurine, while dairy products, such as milk and ice cream, also have taurine, although less of it.

One of the first hints that taurine might be an important but underappreciated nutrient came in the 1970s, when [scientists discovered](#) that a rash of cases of blindness in cats could be explained by the lack of the amino acid in popular cat foods. Cats can't make taurine on their own. When pet food manufacturers changed their formulations to include higher levels of the nutrient, the problems resolved.

A short time after, researchers discovered that the lack of taurine in pet food was also causing a severe heart problem called dilated cardiomyopathy in cats.

Since then, researchers have associated taurine deficiency with a host of age-related diseases in humans.

Is it safe to take taurine supplements?

Neuroscientist Charles Mobbs called the research “extraordinarily thorough.”

“It’s very credible and is consistent with many of the things we already know about taurine and aging,” said Mobbs, who specializes in endocrinology and geriatrics at the Icahn School of Medicine at Mount Sinai in New York. “This research brings it to the next level.”

Mobbs would like to see future research explaining why taurine levels decline with age and how the nutrient works.

“Because the study is so thorough, it’s likely that the results

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When it comes to giving people taurine as a supplement, Dr. Toren Finkel, a cardiologist, is concerned that “if you scale the dose given to the mice to a human dose, it would be 5 to 6 grams per day.”

“Many pills people take are 100 milligrams,” said Finkel, the director of the Aging Institute of the University of Pittsburgh and UPMC. “A dose of 5 grams would be 50 times that. So that’s a lot.”

The equivalent of 5 grams would be about 1 teaspoon.

“One really nice part of the study is that they saw declines in taurine in multiple species,” said Finkel, who isn’t part of the study. “And if you intervene with taurine supplements, it appears to reverse a lot of aging issues in multiple species. These are very intriguing results.”

The new study “provides one more piece of evidence that dietary alterations can have an impact on aging and aging-related pathologies,” said Dr. Douglas Vaughan, the chair of medicine at the Northwestern University Feinberg School of Medicine, who isn’t associated with the new research.

While the researchers used supplements to boost taurine levels, people can reach the same goal by consuming foods that are high in the nutrient, Vaughan said.

The research was funded by the National Institutes of Health and the Nathan Shock Centers of Excellence. Columbia University has applied for patents for medical uses of taurine, a spokesperson for the university said in an email.

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