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Taurine's Astounding Anti-Aging Powers Raise New Questions

Analysis by Lisa Jarvis | Bloomberg

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The perpetual quest for a magic elixir that can slow the aging process has a new prospect: an amino acid called taurine. An impressive study, published today in the prominent journal *Science*, suggests the nutrient could play an important role in aging and health — and should prompt rapid investment in studies to test its value to humans.

Taurine is an essential molecule that our bodies make naturally, and that we also get from foods like shellfish, meat and, in lower amounts, dairy. But as we get older, levels of the nutrient seem to nosedive.

A large team of researchers led by Vijay Yadav, who leads Columbia University's Systems Biology of Aging Laboratory, have spent a decade amassing compelling evidence that the amino acid plays a key role in aging. Mice fed taurine lived 10–12% longer than ones that went without; worms' lives were extended by 10-23%; and middle-aged monkeys showed improvements across a swath of health parameters. Meanwhile, researchers looked back at data collected in a population-level study in the UK and found a correlation between higher levels of taurine and improved health.

Importantly, the mice, which were studied most comprehensively, didn't just live longer — they were healthier. Compared to their furry friends taking a placebo, they were slightly leaner, used more energy, had improved functioning of multiple organs, displayed fewer anxious behaviors and had a younger-looking immune system.

“Taurine somehow seems to hit the engine room of aging,” says Henning Wackerhage, an exercise biology professor at Technische Universität München, who was among the many contributors to the study.

Experts in aging biology that I spoke with universally agreed that the study checked all the right boxes, suggesting taurine could be an important new tool in promoting healthy longevity. Not only did the research team conduct a comprehensive battery of tests to prove the health effects of the molecule in mice (with supporting evidence in other model organisms), but they wisely studied it in aging mice — too many studies in this field make the mistake of testing only young animals.

“It's really a thumbs up,” says Nir Barzilai, director of the Institute for Aging Research at the Albert Einstein College of Medicine. “The question for me, is where do you take it from here?”

Indeed, the next steps in understanding the value of taurine are critically important. The looming question, of course, is whether it can improve health and lifespan in humans. Only well-designed clinical studies can answer that and, so far, none are underway.

Funding agencies should feel the urgency to make sure that gets remedied. The danger, of course, is that consumers reading headlines about the amino acid's magical abilities in mice might be tempted to conduct their own personal anti-aging experiments. They will have no problem finding supplements for that project. Taurine is readily available on Amazon and is already added to energy drinks. (Yadav specifically cautioned against guzzling those, as they typically contain other ingredients that could counteract any positive effects).

There's several problems with the impulse to just add a walloping dose of taurine to your diet. The first and most important issue is safety: While there is a reasonable body of research suggesting taurine is safe as a supplement, no one has studied its routine use at the dosages needed to see an effect in the animals in Yadav's experiments, or for that matter, across the wide range of people who might take it.

One minor worry, but one that should be explored as soon as possible, is whether taurine's ability to improve the health and functioning of normal cells could also promote the survival of cancer cells, says James Kirkland, director of the Mayo Clinic's Robert and Arlene Kogod Center on Aging. If so, the supplement could be dangerous for someone with cancer.

And then there's the larger question of whether taurine even can help humans in the same way it seems to help mice. And if it indeed does allow people to live longer and healthier, when is the right age to take it? And at what dose and for how long? Last, but not least, how does it work?

Answering such questions definitively could take yearslong studies that enroll tens of thousands of people. But researchers who study aging interventions have come up with some creative trial designs that could provide preliminary answers.

One approach would be to recapitulate in humans the same type of experiment that Yadav's team performed in middle-aged monkeys. That would mean simply giving taurine to a small cohort of people and looking for signs of improvement across a bunch of different health markers found in places like blood, saliva, liver and muscle tissues. That could give researchers confidence to do more intensive studies in, for example, elderly people with degenerative diseases.

And the National Institute of Aging also has a robust network of collaborators that work to understand how and when interventions are worthwhile. Taurine should be added to the slate of drugs and supplements that group is studying.

The lack of human data in the taurine study doesn't leave consumers completely hanging. The researchers identified one thing that the public can do right now to safely increase their taurine levels and potentially stave off aging: exercise. Wackerhage's lab made volunteers bike to the point of exhaustion, and found that led to a marked rise in taurine metabolites in their blood.

That's obviously not the quick fix everyone is looking for. But it's the safest bet until there is more robust data to back up the latest possible miracle pill.

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