

Taurine Is Unlikely to be a Good Aging Biomarker

NIH study finds taurine levels were inconsistently associated with health outcomes.

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Scientists at the National Institutes of Health (NIH) have found that levels of circulating taurine, a conditionally essential amino acid involved in multiple important biological functions, is unlikely to serve as a good biomarker for the aging process. In blood samples from humans, monkeys, and mice, scientists found that circulating taurine levels often increased or remained constant with age.

Analysis of longitudinal data showed that within-individual differences in taurine levels often exceeded age-related changes. Researchers also found that taurine levels were inconsistently associated with health outcomes across age, species, and cohorts, suggesting that declining taurine is not a universal marker of aging. Instead, its impact may depend on individual physiological contexts shaped by genetic, nutritional, and environmental factors. Results are published in [Science](#).

Taurine recently gained popularity as dietary supplement due to recent research that found supplementation with taurine improved multiple age-related traits and extended lifespan in model organisms (worms and mice). However, there is no solid clinical data that shows its supplementation benefits humans.

“A recent research article on taurine led us to evaluate this molecule as a potential biomarker of aging in multiple species,” said Rafael de Cabo, PhD, study co-author and chief of the Translational Gerontology Branch at NIH’s National Institute on Aging (NIA).

Researchers measured taurine concentration in longitudinally collected blood from participants in the [Baltimore Longitudinal Study of Aging](#) (aged 26-100 years), rhesus monkeys (aged 3-32 years) and mice (aged 9-27 months). Taurine concentrations increased with age in all groups, except in male mice in which taurine remained unchanged.

Similar age-related changes in taurine concentrations were observed in two cross-sectional studies of geographically distinct human populations, the Balearic Islands Study of Aging (aged 20-85) from the Balearic region of Mallorca, and the Predictive Medicine Research cohort (aged 20-68) from Atlanta, Georgia, as well as in the cross-sectional arm of the Study of Longitudinal Aging in

Mice.

“We used longitudinal, cross-species data across the lifespan under normal conditions aimed to clarify how taurine levels change with age as a biomarker for aging, a key advance for aging research,” added Maria Emilia Fernandez, PhD, study co-author and postdoctoral fellow of the Translational Gerontology Branch at NIA.

Researchers also found that the relation between taurine and muscle strength or body weight was inconsistent. For example, analyses of gross motor function highlight the limitations of considering solely circulating taurine changes as indicative of biological aging, as comparatively low motor function performance can be associated either with high or low concentrations of taurine, whereas in other cases, no relation at all is found between these variables.

“Identifying reliable biomarkers to predict the onset and progression of aging and functional decline would be a major breakthrough, enabling more effective, personalized strategies to maintain health and independence into old age,” emphasized Luigi Ferrucci, MD, PhD. study co-author and scientific director at NIA.

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