

Dietary supplementation shown to improve nutrition biomarkers in study of older men

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Multivitamins. Credit: Oregon State

A six-month study of healthy older men demonstrated that daily

multivitamin/multimineral supplementation had a positive effect on key nutrition biomarkers.

The research led by Oregon State University's Tory Hagen and Alexander Michels also showed that the changes in nutrition status could have direct connections to cellular function, measured by the oxygen consumption of the study participants' blood cells.

The findings, published in the journal *Nutrients*, suggest that supplementation may be a key tool to help people stay healthier as they age.

"Many older adults take a [multivitamin](#), thinking it will help them stay healthy," said Michels, a research associate at OSU's Linus Pauling Institute. "However, previous studies have shown mixed results when it comes to multivitamins and disease risk. We wanted to know why there was so much uncertainty. Is it possible that multivitamins aren't as effective at changing nutrition biomarkers in [older adults](#)?"

The research group, which included eight OSU scientists, recruited 35 [healthy men](#) age 68 or greater for the double-blind study—half received a Centrum Silver supplement, the other half received a placebo, and participants did not know what they were receiving. None of the participants was allowed to take other supplements during the study, except for vitamin D if it was prescribed by their doctor.

"Our tests showed that many of these older men were not obtaining the optimal levels of several vitamins when the study started," said Hagen, principal investigator and Helen P. Rumbel Professor for Healthy Aging Research at the Linus Pauling Institute. "So there certainly was room for improvement."

After the six-month trial, differences in the supplement and placebo

groups became apparent. While those taking the multivitamin showed improved biomarkers of nutrition, those on the placebo did not.

"Several of the participants assigned to the placebo group had blood nutrition biomarkers fall during the study," said Hagen, who is also a professor of biochemistry and biophysics at OSU. "It suggests that food alone was not enough to keep their vitamin and carotenoid levels up."

Carotenoids are yellow, orange and red pigments synthesized by plants, and they play multiple roles in human health. Some carotenoids like beta-carotene can provide the body with an extra source of vitamin A.

Although the researchers did not measure disease risk, they did test white [blood cells](#), part of the body's immune system.

"We were amazed to find that the men who took the placebo showed reduction in cellular oxygen consumption," Hagen added, noting that oxygen consumption is an indicator of cell function. "This was not observed in men who took the multivitamin, suggesting a connection between vitamin status and white blood cell function that we are eager to explore further."

The researchers believe the study is the beginning of a new era for multivitamin research.

"Our evidence indicates that many older men could benefit from a daily multivitamin, but the response did vary from individual to individual," Michels said. "Knowing who benefits the most and why will be key for multivitamin trials that evaluate disease risk in the future."

The research team included the Linus Pauling Institute's Judy Butler, Sandra Uesugi, Ken Lee, Balz Frei, Gerd Bobe and Kathy Magnusson. The researchers also represent OSU's colleges of Science and

Agricultural Sciences and Carlson College of Veterinary Medicine.

More information: Alexander J. Michels et al, Multivitamin/Multimineral Supplementation Prevents or Reverses Decline in Vitamin Biomarkers and Cellular Energy Metabolism in Healthy Older Men: A Randomized, Double-Blind, Placebo-Controlled Study, *Nutrients* (2023). [DOI: 10.3390/nu15122691](https://doi.org/10.3390/nu15122691)

Provided by Oregon State University

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