

Negative effects of vitamins on voles cast doubt on health supplement benefits

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Vitamin C and vitamin E dramatically reduce the lifespan of voles, biologists have found, raising questions about the benefits of vitamins as a health supplement.

A new paper published in the journal *Biology Letters* explains the research. The team fed field voles a diet supplemented with high levels of vitamin E or vitamin C from the age of two months in either warm or cold conditions and compared their longevity to groups of voles fed a regular diet.

High doses of [dietary antioxidants](#) such as vitamins are commonly suggested to slow the process of cellular ageing by lessening the damage to proteins, lipids and DNA caused by [free radicals](#).

Previous research conducted by the team had shown that the longevity of mice could be extended by administering particular vitamin supplements, despite the supplements' limited effectiveness in reducing [free radical damage](#).

However, the opposite was found to be true in voles. Voles in cold conditions fed supplements of vitamin E or vitamin C lived much shorter on average than those fed a regular diet. Similarly, in warm conditions, supplemented voles fed vitamin E or vitamin C lived much shorter than those fed a regular diet. Compared to animals on a regular diet, lifespan was reduced by 11% and 26% for vitamin E and C voles in the cold and by 17% and 18% for vitamin E and C voles in the warm. Despite the

effect on the voles' lifespans, the researchers found that the vitamin supplements did have some effect in decreasing free radical damage.

Professor Colin Selman of the University of Glasgow's Institute of Biodiversity, Animal Health and Comparative Medicine, who was first author on the work, said: "When we began our research, we expected that voles' lifespans would be boosted by the [vitamin supplements](#) in a similar way to the mice we had tested previously, so we were surprised to see that was not the case. Our findings suggest that major differences exist in the effects of high doses of antioxidants on oxidative damage and lifespan across species."

Professor John Speakman, of the University of Aberdeen, who led the work, said: "It's unlikely that randomised controlled trials examining the effects of antioxidant supplementation on human [lifespan](#) would be possible, so we are dependent on the results of animal studies. It's impossible at this stage to extrapolate the results from this small amount of data we have on voles and mice but it does suggest that caution is warranted in the use of high doses of antioxidant vitamins."

More information: The paper, titled 'Deleterious consequences of antioxidant supplementation on lifespan in a wild-derived mammal', is published in *Biology Letters* and is available online at [rsbl.royalsocietypublishing.org ... nt/9/4/20130432.full](https://royalsocietypublishing.org/doi/10.1098/rsbl.2013.0432)

Provided by University of Glasgow

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