

Fasting diet could make you more susceptible to infection

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Researchers say the intermittent fasting diet could make the body more susceptible to infections

(Medical Xpress)—People throughout history have searched for ways to live longer, from fad diets to taking vitamin pills. Now scientists from our Department of Biology & Biochemistry have found evidence that whilst anti-aging treatments such as taking anti-oxidants or restricting diet can have temporary benefits, they also come with risks.

The so-called 'Intermittent Fasting', or '5:2' [diet](#) has become particularly popular recently, with celebrities and the media endorsing it as a way of reducing blood pressure, increasing lifespan and protection against conditions such as dementia, in addition to weight loss effects.

However, new research from the University of Bath suggests that such diets may in the long term affect the immune system, making people less

able to fight infection.

The researchers studied four stress and immunity genes in fruit flies that are associated with longevity to understand the link between life expectancy and the ability to fight infection. Similar genes are activated by certain "anti-aging" treatments such as starvation diets or taking antioxidants.

Their study, published in the scientific journal *Evolution*, found that exposure to a fungal pathogen extended the lives of fruit flies significantly, by activating these stress and immunity genes.

However in the long term they found that treatments which extended life and increased fertility led to a severe reduction in immune response, making them more susceptible to infection.

The genes studied in the fruit flies are similar to those present in humans, and so the researchers believe their findings could have implications for us too.

Dr Nick Priest, Lecturer in Biology & Biochemistry at the University, explained: "Many studies have documented benefits of diet restriction and anti-oxidants consumption, but there is a lack of data on levels of illness in people administered these anti-ageing treatments.

"We know that certain stresses such as starvation or exposure to pathogens can extend life and increase fertility, but we have found that ironically this has a trade-off in terms of immune function.

"Our findings are not all that surprising. We have known for decades that starved mice are more likely to succumb to serious infections. But, there has been a lot more interest in the short term benefits than potential long-term costs.

"Another recent study highlighted in the media from the lab of a colleague, Professor Valter Longo, showed that short-term fasting in elderly cancer patients increased their levels of white blood cells and helped them to fight cancer. This shows that acute fasting can be helpful, however, our study suggests that in the long term fasting might make people less able to fight infections.

"There are clear health benefits to diets such as the 5:2 regime, but we need to bear in mind there are side effects.

"It shows that even the fountain of youth should come with a warning label."

The researchers are now looking into the effects of high protein diets such as Atkins on the [immune system](#) using [fruit flies](#) as a model system.

More information: McClure, C. D., Zhong, W., Hunt, V. L., Chapman, F. M., Hill, F. V. and Priest, N. K. (2014), "Hormesis results in trade-offs with immunity." *Evolution*. DOI: [10.1111/evo.12453](https://doi.org/10.1111/evo.12453)

Provided by University of Bath

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