

Don't cry over fermented milk: Specific kefirs improve behaviors in mice

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Fermented foods have become very popular because of the growing awareness of the importance of gut health. While fermentation is one of the oldest forms of food preservation, much has still to be learned about the specific health benefits of fermented foods for our physical and mental health.

Now researchers at APC Microbiome Ireland SFI Research Centre at University College Cork and Teagasc have shown that two varieties of [kefir](#) had similar effects on the gut microbiome of mice, yet had different effects on their immune systems and behavior.

Recently, a number of studies have suggested that the consumption of fermented foods, such as kefir, are associated with an improvement in mood in humans, but the reasons for this benefit was not clear.

One way in which fermented foods could alter our behavior is by changing the community of bacteria in our gut. It has become clear that these bacteria can communicate with our brain by producing chemicals called neurotransmitters, and this communication is referred to as the "gut-brain axis."

"In our experiment, we wanted to see if a kefir could affect the gut-brain axis" said the co-first author, Dr. Aaron Walsh, who was a member of Prof Paul Cotter's team at APC Microbiome Ireland.

Kefir is a fermented milk drink that is produced when a kefir "grain," which contains a community of microorganisms, is added to milk to initiate natural fermentation. The grains ferment the milk, incorporating some of their friendly organisms to create the cultured product. Fermentation makes [food](#) easier to digest, less allergenic and can release bioactive molecules that have health benefits in their own right. Consuming fermented foods can potentially deliver large numbers of beneficial microbes, and the substances that they produce (metabolites), to the gut , encouraging a healthy microbiome.

"We have previously used DNA-based technologies to determine the specific microbes present in kefir and how they might contribute to kefir's health-promoting properties" said Prof Paul Cotter.

Some positive effects of kefir have already been described and research has previously shown that consumption of specific kefirs, or kefir microorganisms, can reduce weight gain or beneficially impact the immune system in rodents. However, it was previously unknown if different kefirs have different effects when consumed, and if kefir consumption can alter behavior.

"This research shows that these two different kefirs had a similar effect on the gut [microbiome](#) and increased its capacity to produce the neurotransmitter GABA in mice," said Dr. Marcel van de Wouw, a former Ph.D. student at APC Microbiome Ireland and co-first author on the research publication. "Interestingly, both kefirs had different and positive effects on the immune system and various behaviors."

Prof John Cryan, leader of the research, said "This research shows that kefir can impact the microbiota-gut-brain axis and mouse behavior in different ways under different conditions. More research needs to be performed to identify why different kefirs have different effects when consumed. And more research is needed to investigate the impact of kefir on humans."

More information: Marcel van de Wouw et al. Distinct actions of the fermented beverage kefir on host behaviour, immunity and microbiome gut-brain modules in the mouse, *Microbiome* (2020). [DOI: 10.1186/s40168-020-00846-5](#)

Provided by Teagasc

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