

Probiotics in kombucha found to mimic fasting and reduce fat stores in *C. elegans* model

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Image of small batch Kombucha Tea fermenting in the lab. Credit: Elizabeth Poindexter, The Graduate School at UNC-Chapel Hill, CC-BY 4.0 (creativecommons.org/licenses/by/4.0/)

In a new study, researchers found that the microbes in kombucha tea make changes to fat metabolism in the intestines of a model worm species that are similar to the effects of fasting. Robert Downen at the University of North Carolina at Chapel Hill and colleagues, present these findings in the journal *PLOS Genetics*.

Kombucha is a sweetened, fermented tea beverage that has surged in popularity recently, in part due to its supposed [health benefits](#), such as lowering [blood pressure](#), preventing cancer and protecting against metabolic disease and liver toxins. These benefits are believed to come from the drink's probiotic [microbes](#) and their effects on metabolism, but the associated health claims have not been well studied in humans.

Downen's team investigated how microbes from kombucha tea impact metabolism by feeding them to the model nematode worm *C. elegans*.

The researchers found that the yeast and bacteria colonize the worms' intestines and create metabolic changes similar to those that occur during fasting. The microbes alter the expression of genes involved in [fat metabolism](#), leading to more proteins that break down fats and fewer proteins that build a type of fat molecule called triglycerides. Together, these changes reduce fat stores in the worms.

The new results provide insights into how probiotics in kombucha tea reshape metabolism in a model worm species, and offer hints to how these microbes may be impacting human metabolism.

It's important to remember that more research is required to provide evidence that humans consuming kombucha experience similar effects as the *C. elegans* model studied here—but these findings appear consistent with the reported human health benefits of kombucha, note the authors, and could inform the use of the beverage in complementary health care approaches in the future.

The authors add, "We were surprised to find that animals consuming a diet consisting of the probiotic microbes found in Kombucha Tea displayed reduced fat accumulation, lower triglyceride levels, and smaller lipid droplets—an organelle that stores the cell's lipids—when compared to other diets. These findings suggest that the microbes in [kombucha](#) tea trigger a 'fasting-like' state in the host even in the presence of sufficient nutrients."

More information: Kombucha Tea-associated microbes remodel host metabolic pathways to suppress lipid accumulation. *PLoS Genetics* (2024). [DOI: 10.1371/journal.pgen.1011003](https://doi.org/10.1371/journal.pgen.1011003)

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