Exercise and Green Tea Extract Protect Against Fatty Liver Disease in Mice

Researchers believe this finding may have implications for human health.

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Among mice fed a high-fat diet in a recent study, those that were also compelled to exercise and fed green tea extract had a greatly lower risk of developing obesity-related non-alcoholic fatty liver disease (NAFLD). Researchers believe this finding could have implications for the health of humans.

Rates of NAFLD, and its more severe form, non-alcoholic steatohepatitis (NASH), are increasing around the world. An estimated 100 million people worldwide are expected to have fatty liver disease by 2030. Over time, NAFLD can lead to cirrhosis, liver cancer and the need for a liver transplant. Currently, there are no validated treatments for the disease.

Joshua Lambert, PhD, an associate professor of food science at Penn State, and colleagues conducted a study in which they fed mice a high-fat diet for 16 weeks. Some of the mice were also fed green tea extract, some also exercised regularly by running on a wheel and some both received the extract and exercised. The researchers published their findings in the Journal of Nutritional Biochemistry.

Compared with the control group of mice, the exercising mice that were also fed green tea extract had 92% lower ALT liver enzymes and 80% lower accumulation of fat in their livers, while the mice that either only exercised or only received the green tea extract had about half as much fat in their livers.

The green-tea-consuming, exercising mice also had higher levels of fats and protein in their feces than the control animals.

“By examining the livers of these mice after the study concluded and by screening their feces during the research, we saw that the mice that consumed green tea extract and exercised actually were processing nutrients differently—their bodies were handling food differently,” Lambert said in a press release.

Speaking of particular micronutrients in green tea, he continued: “We think the polyphenols in green tea interact with digestive enzymes secreted in the small intestine and partially inhibit the

breakdown of carbohydrates, fat and protein in food. So if a mouse doesn't digest the fat in its diet, that fat and the calories associated with it pass through the mouse's digestive system, and a certain amount of it ends up coming out in its feces."

As research in this field develops further, Lambert advises individuals to exercise more and to replace high-calorie drinks with decaffeinated, unsweetened green tea.

"Combining the two might have health benefits for people," he said, "but we don't have the clinical data yet."

To read a press release about the study, click here.

To read the study abstract, click here.

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