

Fruit flies fed organic diets are healthier than flies fed nonorganic diets, study finds

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(Phys.org) —A new study looking at the potential health benefits of organic versus non-organic food found that fruit flies fed an organic diet recorded better health outcomes than flies fed a nonorganic diet.

The study from the lab of SMU biologist Johannes H. Bauer, Southern Methodist University, Dallas, found that fruit flies raised on diets of organic foods performed better on several tests for general health.

"While these findings are certainly intriguing, what we now need to determine is why the flies on the organic diets did better, especially since not all the organic diets we tested provided the same [positive health](#) outcomes," said Bauer, principal investigator for the study.

Fruit flies on organic diets showed improvements on the most significant measures of health, namely fertility and longevity, said high school student researcher Ria Chhabra.

"We don't know why the flies on the organic diet did better. That will require further research. But this is a start toward understanding potential [health benefits](#)," said Chhabra, a student at Clark High School in Plano, Texas, who led the experiment.

Chhabra sought to conduct the experiments after hearing her parents discuss whether it's worth it to buy organic foods to achieve possible health benefits.

Bauer, an assistant professor in SMU's Department of Biological Sciences, mentored Chhabra by helping guide and design her research experiments. The research focus of Bauer's fruit fly lab is nutrition and its relationship to longevity, health and diabetes.

"It's rare for a high school student to have such a prominent position in the lab. But Ria has tremendous energy and curiosity, and that convinced me to give this research project a try," Bauer said.

The findings, "[Organically grown food provides health benefits to *Drosophila melanogaster*](#)," have been published in the open access journal *PLOS One*. Bauer and Chhabra co-authored the paper with Santharam Kolli, a research associate at SMU.

Flies on organic food performed better on some health tests

"The data demonstrated that flies raised on organic food extracts by-and-large performed better on the majority of health tests," reported the researchers.

It remains unclear why organic diets delivered [better health](#), the researchers said.

The Bauer lab results come at a time when the health effects of organic food are widely debated.

Prior studies by other researchers have found conflicting results when reviewing the scientific literature for data. While several studies have shown elevated nutrient content and lower pesticide contamination levels in organic food, a recent publication reporting a large-scale analysis of all available studies concluded no clear trend was apparent.

Fruit flies were fed extracts from produce purchased at a grocery store

In order to investigate whether organic foods are healthier for consumers, the lab utilized one of the most widely used model systems, the fruit fly [Drosophila melanogaster](#). Because of the low costs associated with fly research and the fly's short life cycle, researchers use fruit flies to study human diseases, from diabetes to heart function to Alzheimer's disease.

The Bauer lab [fruit flies](#) were fed organic and nonorganic produce purchased from a leading national grocery retailer of organic and conventional foods. The flies were fed extracts made from organic and conventional potatoes, soybeans, raisins and bananas. They were not fed any additional nutritional supplements. The researchers tested the effects of each food type independently and avoided any confounding effects of a mixed diet.

The health tests measured longevity, fertility, stress and starvation resistance.

Findings suggest beneficial health effects dependent on specific foods

Some negative or neutral results were obtained using diets prepared from organic raisins, which suggests the beneficial health effects of organic diets are dependent on the specific food item, Bauer said. That might explain some of the inconsistent results in the published studies in the scientific literature, he said, noting some studies suggest there is a nutritional benefit from [organic food](#), while others suggest there is not.

"To our surprise, in the majority of our tests of flies on organic foods,

the flies fed organic diets did much better on our health tests than the flies fed conventional food," Bauer said. "Longevity and fertility are the two most important aspects of fly life. On both of these tests, flies fed organic diets performed much better than flies fed conventional diets. They lived longer, had higher fertility, and had a much higher lifetime reproductive output."

Factors such as soil condition and latitude where the produce was grown weren't considered, mimicking a typical grocery store shopping experience.

Provided by Southern Methodist University

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