

Light can change flavor, scent volatiles in plants and fruits, study finds

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There's an old head-scratcher that asks whether the refrigerator light really goes out when you close the door.

The answer may be about to change.

Scientists have known for hundreds of years that plants respond to [light](#) in a variety of ways.

But the results of a new University of Florida study tell them how specific light wavelengths can manipulate [volatile compounds](#) that control aroma and taste in several high-value crops, including petunia, tomato, strawberry and blueberry.

And their findings open the door to more studies into ways light may someday be used to improve the flavor and [nutritional content](#) of fruits, vegetables and herbs, even the scent of flowers, said Thomas Colquhoun, an assistant professor in [environmental horticulture](#) at UF and lead author of the study that was published online this month by the journal *Postharvest Biology and Technology*.

The team began with petunia cuttings, exposing them to narrow bandwidth LED light in varying wavelengths. They found that a key floral volatile called 2-phenylethanol increased when the plant was exposed to red and far-red treatments (far-red is a hue so far on the [color spectrum](#) that humans can't detect it, but plants can).

They conducted similar tests on tomato, strawberry and blueberry, finding that flavor volatiles in each of those fruits could be manipulated with light. Blueberry volatiles changed the least, but the changes were still statistically significant, said Kevin Folta, chairman of UF's horticultural sciences department. Folta and Colquhoun are part of UF's Institute for Plant Innovation, part of the Institute of Food and Agricultural Sciences.

The technology will likely find its way into grocery store produce sections, greenhouses and food companies involved in postharvest handling and shipping, Folta said.

And consumers might someday find the technology used in their homes, as well.

"You might even see it used in your refrigerator—instead of you closing the door and the light goes out, you'll close the door and the light goes on," Folta said. "And it'll all happen in a way that positively influences the flavor profiles of food."

The team is now working with UF dentistry professor and taste expert Linda Bartoshuk on a National Institutes of Health-funded study that will test whether consumers can taste differences in light-treated fruit.

Tariq Akhtar, a colleague of Colquhoun and Folta and soon-to-be faculty member at the University of Guelph in Ontario, studies plant molecular compounds and said the UF study describes a "noninvasive, subtle change" that could unlock vast potential for plants used for both food and medicines.

Provided by University of Florida

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