

Supermarket lighting enhances nutrient level of fresh spinach

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Spinach on display under 24-hour light in supermarkets actually gains in content of some nutrients. Credit: Marc Villalobos, USDA-ARS

Far from being a food spoiler, the fluorescent lighting in supermarkets actually can boost the nutritional value of fresh spinach, scientists are reporting. The finding could lead to improved ways of preserving and enhancing the nutritional value of spinach and perhaps other veggies, they suggest in a study in *ACS' Journal of Agricultural and Food Chemistry*.

Gene Lester, Donald J. Makus, and D. Mark Hodges note that fresh spinach is a nutritional powerhouse, packed with vitamin C, [vitamin E](#), folate (a B vitamin), and healthful carotenoid antioxidants. Supermarkets often display fresh spinach in clear plastic containers at around 39 degrees Fahrenheit in showcases that may be exposed to fluorescent light

24 hours a day. Lester, Makus, and Hodges wondered how this continuous [light exposure](#) might affect spinach's [nutritional value](#).

The scientists exposed fresh spinach leaves to continuous light or darkness during simulated retail storage conditions for three to nine days. Spinach stored in light for as little as three days had significantly higher levels of vitamins C, K, E, and folate. They also had higher levels of the healthful carotenoids (plant pigments) lutein and zeaxanthin. During continuous light exposure after nine days, levels of folate increased between 84 and 100 percent, for instance. Levels of [vitamin K](#) increased between 50 and 100 percent, depending on the spinach variety tested. By contrast, spinach leaves stored under continuous darkness tended to have declining or unchanged levels of nutrients, the scientists say.

More information: "Relationship between Fresh-Packaged Spinach Leaves Exposed to Continuous Light or Dark and Bioactive Contents: Effects of Cultivar, Leaf Size, and Storage Duration", *Journal of Agricultural and Food Chemistry*.

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