

Clemson researchers: Kale could help billions overcome 'hidden hunger'

Clemson study finds a single 100-gram serving of fresh kale can provide a significant percentage of the recommended daily intake of minerals required by humans.

CLEMSON, SOUTH CAROLINA, USA, November 13, 2017 /EINPresswire.com/ -- CLEMSON — Eating [kale](#) may help billions of people worldwide overcome micronutrient malnutrition, Clemson University researchers have found.

Micronutrient malnutrition, or “hidden hunger,” affects people everywhere who do not eat sufficient daily quantities of such micronutrients as potassium, calcium, magnesium, iron and zinc that are found in leafy green vegetables. The researchers determined people could eat kale to help supply their bodies with these much-needed nutrients.



Kale growing in Clemson Student Organic Farm helps researchers study how eating kale could help supply micronutrients needed for human bodies to properly function.

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Thavarajah, associate professor in the plant and environmental sciences department. “Our data suggests kale is a whole food that can provide significant amounts of daily essential minerals and prebiotic carbohydrates. We believe consumers could greatly benefit by eating kale on a regular basis.”

The Clemson study was funded by a specialty crop block grant from the S.C. Department of Agriculture. It was initiated after the United States Department of Agriculture (USDA) and other federal agencies began encouraging Americans to eat more vegetables as a way to prevent mineral deficiencies and help reduce the number of people who are overweight or

obese. According to the Centers for Disease Control (CDC) few Americans eat the recommended five to six servings of vegetables a day resulting in under-consumption of several valuable nutrients and dietary fiber. Eating kale could help meet these requirements.

“We studied 25 different kale types,” said Indika Mapa, a graduate student helping with the project. “We found that one 100-gram serving of kale provides a significant amount — 10 percent — of the recommended daily allowance for several micronutrients. Because of this, we believe kale can be considered a good source of required micronutrients.”

Researchers concluded kale is a whole food source of essential minerals potassium, calcium, magnesium, manganese and copper. The study also determined kale is an excellent source of dietary fiber, including sugar alcohols, and range of prebiotic carbohydrates that would help to increase healthy gut bacteria. In addition, fresh kale is a low-calorie food (36-98 calories per 100-gram serving) with moderate levels of protein (1.6 to 5.9 grams per 100-gram serving). Thavarajah said these findings should put kale high on the list of recommended foods to eat.

“Our study found kale is a potentially good source of minerals and prebiotic carbohydrates and could be promoted for consumption in American diets based on recommendations of the 2015 Dietary Guidelines Advisory Committee,” Thavarajah said. “Because kale is such a nutritious food, we believe it could be used as a food source in areas where malnutrition is high.”

Kale types used in the study include, curly varieties: Darkibor, Dwarf Green Curled Afro, Pentlang Brig, Red Russian, Redbor, Reflex, Ripbor, Scarlet, Star and Stripes, Starbor, Vates, Winterbor, Blue Ridge, Blue Knight and Maribor. Portuguese varieties studied were Beira and Dauro. Dinosaur Black Magic varieties in the study were Bonanza, Italian Kale and Lacinato. Ornamental variety studied were Fizz and Mustard varieties studied were Frizzy Joe and Frizzy Lizzy.

“Among the kale varieties studied, Frizzy Lizzy, Dauro and Fizz have significantly high levels of essential minerals and prebiotic carbohydrates, moderate protein content and are low in calories,” Thavarajah said. “These data confirm kale is a whole food that can provide significant quantities of daily essential minerals and prebiotic carbohydrates.”

This study was done in collaboration with W.P. Rawl and Sons in Pelion. Ben DuBard, organic farm manager for W.P. Rawl, said kale is a crop that can be grown commercially as well as in home gardens.

“Kale is a hardy, cool-season green and belongs to the cabbage family,” DuBard said. “It grows in the spring and fall. It also can tolerate frosts.”

Costs associated with growing kale vary, depending on the amount of labor involved, as well as other factors, including pests and diseases, such as cabbageworms, flea beetles, aphids and black rot.

“Kale is not terribly hard to grow,” DuBard said. “The preparation for growing kale is the same as for any other crop. Kale does require more nitrogen, so the costs of fertilizing it are a little higher than for other crops.”

Depending on the size of the crop, harvesting kale can be somewhat labor-intensive. Hand harvesting is best as mechanical harvesting can reduce yield, DuBard said.

Plant kale on sites that get full sun exposure. Loamy soil, neutral to slightly alkaline, is best. Water kale plants regularly, making sure not to overwater. Mulch soil heavily after the first hard freeze. Avoid picking the terminal bud, found at the top center of the plant. This will ensure plants remain productive. Kale can be eaten uncooked, such as in salads, or cooked similar to spinach. According to the United States Department of Agriculture (USDA), store kale at 41 degrees Fahrenheit in produce bags for three to five days.

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