

Gene engineering may make healthier plants - experts

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WASHINGTON, Dec 12 (Reuters)

Genetic engineering of crops, which many people fear could make plants dangerous, may in fact make them more nutritious and more able to protect people from cancer and other disease, two U.S. researchers said on Thursday.

They said the same genes that plants use to defend against the sun's rays, drought and other stresses work in the human body to protect against the damage that leads to cancer, blindness and chronic disease.

"Many of the compounds that protect plant cells also protect human cells," Barbara Demmig-

Adams and William Adams of the University of Colorado wrote in a review for the journal Science.

"Improving plant resistance to stress may thus have the beneficial side effect of also improving the nutritional quality of plants," they wrote. The environmental organization Greenpeace and other groups say genetic engineering has the potential to introduce dangerous allergens into food. They oppose the genetic manipulation of crops.

The two biologists, a husband and wife team, reviewed more than 50 studies for their commentary.

Plants make antioxidants such as zeaxanthin and lutein to protect their leaves and fruit from sun damage, and also help protect the

human eye from the sun's rays, they wrote.

Lutein and zeaxanthin also may enhance immune system response and protect against heart disease and cancer. Scientists at companies and academic research centers are already at work trying to make rice that will grow in salt-laden soil, that will germinate at low temperatures, and that contain extra vitamin A.

"Efforts to enhance plant antioxidant content may serve a dual purpose," the two wrote. "We may be able to manipulate plant response to environmental stress while simultaneously enhancing the nutritional quality of plant foods."

People are already being urged by doctors to eat more plants, with

study after study showing that eating whole grains, fruits and vegetables greatly reduces the risk of cancer, heart disease, and even disease such as diabetes and macular degeneration, which can lead to blindness.

Adams and Demmig-Adams cited studies that show some of the basic molecular mechanisms that underlie these benefits. For instance, plants need to get rid of the excess energy generated by photosynthesis, and a complex interaction of genes does this.

One product of this genetic interaction is zeaxanthin, which itself is made from beta-carotene — best known as the precursor, in animals, to vitamin A. Genetic engineering could be used to create plants that

make extra zeaxanthin. "Food molecules enter our bodies and modulate our genes," Demmig-Adams, a biologist, said in a statement. "One's diet can be more powerful than drugs." The two researchers noted studies that have shown attention-deficit hyperactivity disorder, schizophrenia and dyslexia all can be influenced by food. Adding omega-3 fatty acids, found in flaxseed oil, soy and canola as well as fish oil, can improve these conditions.

"If we had diets more enriched with the right plant foods, we would likely live longer, and, more importantly, maintain a higher quality of life as we age," said Demmig-Adams.