

Clemson chemists discover new way antioxidants fight debilitating diseases

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Cancer, cardiovascular diseases, Parkinson's and Alzheimer's are often linked to DNA damage that occurs when metal ions in the body such as iron and copper produce reactive oxygen compounds that damage human cells. Studies have shown antioxidants that neutralize this activity and that occur naturally in fruits, vegetables, green tea, garlic and onions can be effective at preventing DNA damage.

A Clemson team of chemists, presenting its research at the 234th annual American Chemical Society national meeting in Boston Aug. 19-24, has found a new mechanism for antioxidant activity: the antioxidants bind to naturally present iron and copper in the body to prevent formation of reactive oxygen compounds that damage DNA.

“Our studies have shown that antioxidants even at low concentrations found in these foods bind to iron and copper and prevent DNA damage,” said lead investigator and chemist Julia Brumaghim. “This goes a long way in understanding how antioxidant supplements might help treat or even prevent these debilitating illnesses.”

The group is now testing its findings in bacterial cells and will test human cells next. Clemson graduate students on the project include Erin E. Battin, Nathan R. Perron and Ria R. Ramoutar. Research is funded through a grant from the American Heart Association.

Source: Clemson University

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