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Melanin production discovered in fat tissue

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A two-year study conducted by researchers at George Mason University, INOVA Fairfax Hospital and the National Cancer Institute may open the door to new therapies for combating chronic diseases associated with obesity, a condition that affected more than 33 percent of American adults in 2005-06 according to the Centers for Disease Control and Prevention.

While analyzing samples taken from morbidly obese patients undergoing weight loss surgery, the researchers discovered that substantial quantities of melanin—a pigment that gives the skin, the hair and the iris of the eye their natural color—were being produced in the study participants' fat tissue.

Ancha Baranova, assistant professor in George Mason University's Department of Molecular and Microbiology and the paper's lead author, explains that melanin production has never before been identified in fat tissue. She believes that the antioxidant, which has been shown to have anti-inflammatory properties, could be the body's natural defense against obesity-related conditions such as type 2 diabetes, coronary heart disease, fatty liver disease, polycystic ovary syndrome and some cancers.

"Stockpiling extra calories is difficult even for specialized fat cells; having too much lipid molecules takes its toll on the fat cells, producing oxidative stress," says Baranova. "It's not unthinkable that these cells would adapt and produce melanin as a form of self-protection. As a side benefit, melanin may suppress inflammatory properties of the extra pounds of the fat."

Baranova notes that a larger study is needed in order to confirm the role that the body's production of this compound plays in fat tissue. However, the discovery suggests that melanin-based therapies may one day be used to reduce the incidence of chronic diseases among the morbidly obese.

"This opens an entirely new avenue for medical interventions because the process of biosynthesis of melanin is relatively easy to meddle with," says Baranova. "We hope that this study will spur the development of preventive medications aimed at curtailing devastating metabolic complications in obese and overweight populations."

Source: George Mason University

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