

Oxidative stress biomarkers don't always signal diabetes risk

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Credit: Georgia State University

High levels of compounds found in the body that are commonly

associated with oxidative damage may actually be a good sign for some people, according to a recent review of multiple human studies led by an epidemiologist at the School of Public Health at Georgia State University.

Compounds known as F_2 -isoprostanes are conventionally interpreted as indicators or "biomarkers" of harmful oxidative stress detectable in human tissues and bodily fluids, researchers stated. These molecules are footprints of highly reactive free radicals, which are mainly formed in normal processes of energy metabolism.

"It has been hypothesized that elevated F_2 -isoprostane levels—as biomarkers of oxidative stress—will predict increased risk of type 2 [diabetes](#)," the researchers said. But the hypothesis didn't hold true when the risk of diabetes was examined in a multi-ethnic study group. The study found that elevated levels of F_2 -isoprostanes are associated with a reduced risk of diabetes. Researchers explained their results by connecting elevated F_2 -isoprostane levels to the intensity of energy metabolism, which is known to be protective against [obesity](#) and type 2 diabetes. The study also discovered racial differences in F_2 -isoprostanes.

While African-Americans are at increased risk of developing obesity and type 2 diabetes, they generally have lower levels of F_2 -isoprostanes, the researchers noted in their review. They also noted a study conducted among Atlanta's West African Immigrants, African Americans, and non-Hispanic Whites, which clearly demonstrated that African ancestry is associated with lower F_2 -isoprostane levels.

The researchers also analyzed studies that pointed to an association between increased F_2 -isoprostane levels and physical exercise—an intervention against developing obesity and type 2 diabetes.

"As African Americans show lower systemic levels of F_2 -isoprostanes,

using these non-invasive biomarkers can enable the development of pharmacological and/or life style interventions targeted to the reduction of metabolic risks among African Americans," the researchers said.

Their review summarized 132 publications focused on [racial differences](#) in predisposition to obesity and type 2 diabetes in the United States and global research on F₂-isoprostanes and human health; these studies ranged from socioeconomic and environmental factors determining racial disparities to human molecular studies on F₂-isoprostanes.

The researchers' findings are published in *Diversity and Equality in Health and Care* in the review article "Systemic F₂-Isoprostane Levels in Predisposition to Obesity and Type 2 Diabetes: Emphasis on Racial Differences." The article's lead author is Dr. Dora Il'yasova, associate professor of epidemiology and biostatistics at Georgia State.

More information: Systemic F₂-Isoprostane Levels in Predisposition to Obesity and Type 2 Diabetes: Emphasis on Racial Differences. *Diversity and Equality in Health and Care*. diversityhealthcare.imedpub.com/.../ferences-18823.html

Provided by Georgia State University

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