Adolescents' salt intake correlates with obesity, inflammation

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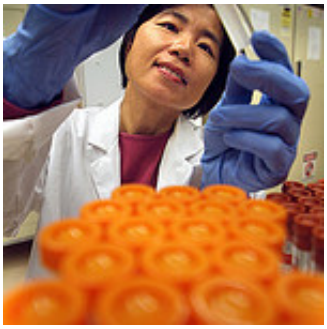

This is Dr. Haidong Zhu, molecular geneticist at the Medical College of Georgia and Institute of Public and Preventive Health at Georgia Regents University. Credit: Phil Jones

Most adolescents consume as much salt as adults – some more than twice the recommended daily allowance – and that high sodium intake correlates with fatness and inflammation regardless of how many calories they consume, researchers report.

In a study of 766 healthy teens, 97 percent self-reported exceeding the American Heart Association's recommendation of consuming less than 1,500 milligrams of sodium daily, according to a study in the journal *Pediatrics*.

"The majority of studies in humans show the more food you eat, the more salt you consume, the fatter you are," said Dr. Haidong Zhu,

molecular geneticist at the Medical College of Georgia and Institute of Public and Preventive Health at Georgia Regents University.

"Our study adjusted for what these young people ate and drank and there was still a correlation between salt intake and obesity," Zhu said.

These high-sodium consumers also had high levels of tumor necrosis factor alpha, which is secreted by immune cells and contributes to chronic inflammation as well as autoimmune diseases like lupus and arthritis. Additionally, the adolescents had high levels of leptin, a hormone produced by fat cells that normally suppresses appetite and burns fat, but at chronically high levels can have the opposite effects.

"Losing weight is difficult, but hopefully more people can be successful at reducing their sodium intake," said Zhu, the study's corresponding author. Reductions would result from not automatically adding salt to food and choosing fresh fruits and vegetables over French fries and processed meats and snacks.

"We hope these findings will reinforce for parents and pediatricians alike that daily decisions about how much salt children consume can set the stage for fatness, chronic inflammation and a host of associated diseases like hypertension and diabetes," said study co-author Dr. Gregory Harshfield, Director of the Georgia Prevention Center at the GRU institute.

High sodium intake has been linked to higher weight, possibly because of increased water retention. While the new study does not prove a causal effect, it contributes to mounting evidence that high sodium could be a direct cause of obesity and inflammation, Zhu and her colleagues report. Longitudinal or randomized clinical trials are needed to clarify the relationships, the researchers said.

"Obesity has a lot of contributing factors, including physical inactivity," Zhu said. "We think that high sodium intake could be one of those factors." Evidence suggests one direct cause may be increasing the size of fat cells.

The MCG study appears to be the first to use several robust measures of fatness to improve accuracy, including magnetic resonance imaging and dual-energy X-ray absorptiometry, which also measures bone density.

Study participants were Augusta-area teens whose fitness and fatness were being assessed by Dr. Bernard Gutin, exercise physiologist and Emeritus Professor of Pediatrics at MCG. Data was collected from 2001-05.

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