

# Sugar overload can damage heart, research shows

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Too much sugar can set people down a pathway to heart failure, according to a study led by researchers at The University of Texas Health Science Center at Houston (UTHealth).

A single small molecule, the glucose metabolite glucose 6-phosphate (G6P), causes stress to the heart that changes the muscle proteins and induces poor pump function leading to heart failure, according to the study, which was published in the May 21 issue of the *Journal of the American Heart Association*. G6P can accumulate from eating too much starch and/or sugar.

Heart failure kills 5 million Americans a year, according to the Centers for Disease Control. The one-year survival rate after diagnosis is 50 percent and there are 550,000 new patients in the United States diagnosed with [heart failure](#) each year.

"Treatment is difficult. Physicians can give diuretics to control the fluid, and beta-blockers and [ACE inhibitors](#) to lower the stress on the heart and allow it to pump more economically," said Heinrich Taegtmeyer, M.D., D.Phil., principal investigator and professor of cardiology at the UTHealth Medical School. "But we still have these terrible statistics and no new treatment for the past 20 years."

Taegtmeyer performed preclinical trials in animal models, as well as tests on tissue taken from patients at the Texas Heart Institute who had a piece of the heart muscle removed in order to implant a [left ventricle](#)

assist device by O.H. "Bud" Frazier, M.D., and his team. Both led to the discovery of the damage caused by G6P.

"When the heart muscle is already stressed from [high blood pressure](#) or other diseases, and then takes in too much glucose, it adds insult to injury," Taegtmeyer said.

The study has opened doors to possible new treatments. Two drugs, rapamycin (an [immunosuppressant](#)) and metformin (a diabetes medication) disrupt signaling of G6P and improved cardiac power in small animal studies.

"These drugs have a potential for treatment and this has now cleared a path to future studies with patients," Taegtmeyer said.

Provided by University of Texas Health Science Center at Houston

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