

Protein levels could signal that a child will develop diabetes

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Georgia Health Sciences University Researchers Sharad Purohit and Jin-Xiong She may have found a red flag that could help children avoid type 1 diabetes, researchers say. Credit: Phil Jones/GHSU Photographer

Decreasing blood levels of a protein that helps control inflammation may be a red flag that could help children avoid type 1 diabetes, researchers say.

Georgia Health Sciences University researchers are looking at blood levels of [interleukin-1 receptor antagonist](#), or IL-1ra, in children being closely followed because their genes put them at risk for [type 1 diabetes](#). They also are looking at diabetic mice missing IL-1ra to see how the protein deficiency affects immune function and destruction of insulin-

producing islet [beta cells](#).

"We want to know if we can use IL-1ra levels to identify children who will soon develop the disease, then use IL-1 inhibitors to prevent it," said Dr. Sharad Purohit, biochemist in the GHSU Center for Biotechnology and [Genomic Medicine](#).

IL-1ra helps reduce inflammation and Purohit's preliminary evidence suggests that low levels predict inflammation is increasing and the immune system is going to attack insulin-producing cells. A three-year, \$500,000 grant from the Juvenile Diabetes Research Foundation will help him explore the hypothesis in the blood of about 2,500 children as well as the [diabetic mice](#).

IL-1 inhibitors already are used to treat [rheumatoid arthritis](#), where inflammation destroys joints. Clinical trials are underway in type 1 diabetes and to see if an inhibitor can halt the islet cell destruction that occurs in type 1 diabetes as well.

While acknowledging the inhibitor may improve type 1 diabetes outcome, GHSU scientists want to know if it can also be used preventively, said Dr. Jin-Xiong She, Director of the Center for Biotechnology and Genomic Medicine.

IL-1ra competes with its counterpart IL-1beta for the IL-1 receptor. In type 1 diabetes, inflammation-promoting IL-1beta appears to be winning. "It's a balance; it's a competition," She said. "There is always a balance between beta cell production and destruction and any process that can change the balance can push you to disease or help you recover from it. In this case, we believe that knowing the balance is off can actually help prevent disease."

Type 1 diabetes typically presents by puberty, as the body's immune

system inexplicably turns against the pancreas' insulin-producing cells. By the time the first symptoms occur, such as increased appetite in the face of significant weight loss, as many as 90 percent of the beta cells may be destroyed, leaving a child facing a lifetime of insulin dependency and often complications such as cardiovascular damage and vision loss. Much like the lifestyle-related type 2 diabetes, the incidence of type 1 is increasing.

Provided by Georgia Health Sciences University

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