

Study identifies possible protective blood factors against Type 2 diabetes

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Researchers at Albert Einstein College of Medicine of Yeshiva University in collaboration with Nurses' Health Study investigators have shown that levels of certain related proteins found in blood are associated with a greatly reduced risk for developing type 2 diabetes up to a decade or more later. The findings, published today in the online edition of *Diabetes*, could open a new front in the war against diabetes.

These proteins are part of what is called the IGF axis. This axis was named for insulin-like growth factor-1, (IGF-1), so called because it has biological effects similar to those of insulin (the hormone that regulates [blood glucose levels](#)) but has a greater effect on cell growth than insulin. The researchers also looked at levels of several proteins known as IGF [binding proteins](#), or IGFBPs, that may have strong effects independent of IGF-1.

Researchers have hypothesized that the IGF axis may influence risk for developing diabetes – an idea supported by laboratory and mouse studies, and a few initial studies in humans. However, the current study is the first large, prospective investigation of several components of the IGF-axis and the risk for developing diabetes, according to co-senior author Howard Strickler, M.D., M.P.H., professor of epidemiology & population health at Einstein.

In the current study, the researchers analyzed levels of IGF-1, IGFBP-1, IGFBP-2, and IGFBP-3 in blood taken from 742 women in the Nurses' Health Study who years later developed type 2 diabetes as well as a

similar number of women in the study who did not develop diabetes. None of the women had any signs or symptoms of the disease at the time their blood samples were taken. The median time between the taking of blood samples and diabetes onset was nine years.

Each component of the IGF axis (IGF-1 and IGFBP-1, -2, and -3) had a significant independent association with diabetes risk – most notably IGFBP-1 and -2. Compared with women in the bottom 20 percent with respect to their levels of IGFBP-1, having high levels of IGFBP-1 (top 20 percent) was associated with a three-fold reduction in risk for diabetes, while high levels of IGFBP-2 were associated with a more than five-fold reduction in diabetes risk.

"Our data provide important new evidence that circulating IGF-axis proteins may have a role in the development of [type 2 diabetes](#)," said Dr. Strickler.

The findings have potential clinical implications. First of all, IGF-axis proteins could help in stratifying people at risk for diabetes. "For example," said Dr. Strickler, "we know that obesity is a major risk factor for diabetes. But some overweight individuals don't develop diabetes, while some thin people do. If our findings are confirmed, they could help doctors more precisely determine who is actually at risk for the disease."

The proteins may also prove useful as targets for novel therapies to prevent or treat diabetes. But Dr. Strickler cautions that it's too early to apply these findings to clinical practice. "IGF-axis proteins have other effects, some beneficial and some not," he notes. "We need to learn more about the connection between the IGF-axis and diabetes before we recommend that people get tested for these substances, and before deciding how we can exploit the IGF-1 axis to help address [diabetes](#)."

Provided by Albert Einstein College of Medicine

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