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Many diabetes patients produce some insulin

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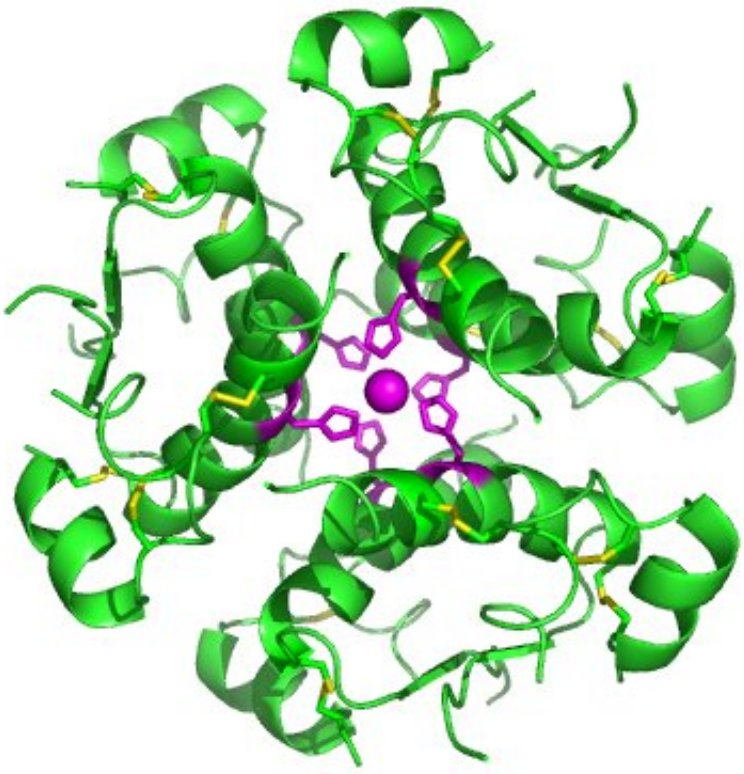

High-resolution model of six insulin molecules assembled in a hexamer. Credit: Isaac Yonemoto/Wikipedia

Some insulin is still produced in almost half of patients that have had type 1 diabetes for more than ten years. The study conducted by researchers at Uppsala University in Sweden has now been published online by the medical journal *Diabetes Care*.

Type 1 diabetes, a chronic disease mainly debuting during childhood or adolescence, has previously been considered to result in full loss of the patients' insulin production. However, by the use of sophisticated insulin assays that have been introduced in recent years, this has now been shown to not be true in all cases.

In a study from Uppsala University more than one hundred type 1 diabetes patients at Uppsala University Hospital have been investigated. Almost half of the adult patients that have had type 1 diabetes for at least ten years still produced some insulin.

The study showed striking differences in the immune system between patients with full loss of their insulin production and patients that still produced some insulin. Patients with remaining insulin production had much higher blood levels of interleukin-35, a recently discovered anti inflammatory signal protein of the immune system. They also had many more immune cells that produce interleukin-35 and dampen immune attacks.

It is still not known if the patients had higher levels of interleukin-35 already at the onset of their disease, or if those levels had increased over the years, stopping immune attacks towards the insulin producing cells as a result. A previous study by the same research group has shown that both patients newly diagnosed for type 1 diabetes and patients with long-standing disease on average have lower levels of interleukin-35 when compared to healthy individuals. The previous study also showed that diabetes development could be prevented, and that fully developed diabetes could be reversed, through interleukin-35 treatment in animal models with type 1 diabetes.

The results of the present study in *Diabetes Care* may increase the interest to develop interleukin-35 into a drug for the treatment of type 1 diabetes. The discovery that almost half of the patients with type 1

diabetes have some remaining insulin production also makes it attractive to let the patients test new treatments that can induce regeneration of their remaining insulin producing cells. Such a study has now been initiated at Uppsala University Hospital.

More information: Daniel Espes et al. Increased Interleukin-35 Levels in Patients With Type 1 Diabetes With Remaining C-Peptide, *Diabetes Care* (2017). DOI: 10.2337/dc16-2121

Provided by Uppsala University