Omega-3 fatty acid supplementation may treat autoimmunity in type 1 diabetes

April 4 2017

Type I diabetes (T1D) is an autoimmune condition that develops after the immune system attacks and destroys pancreatic β cells, leading to impaired insulin production. Currently, no therapies can successfully reverse the damage or progression of autoimmune attacks in T1D, but recent findings have suggested that people with autoimmune conditions may benefit from supplementation with omega-3 fatty acid (FA), a type of polyunsaturated FA found in fish oil.

In this issue of the *JCI*, researchers in Allan Zhao's lab at Guangdong University of Technology determined that dietary supplementation with omega-3 FAs can diminish the inflammatory processes that contribute to development of T1D. In a mouse model of T1D, they observed that increasing omega-3 FA consumption improved glucose metabolism and reduced the occurrence of diabetes.

These improvements were associated with reductions in pro-inflammatory signaling molecules as well as reductions in immune cell infiltration into pancreatic islets. Both dietary supplementation and gene therapy-mediated increases in omega-3 FAs led to long-term improvements in glucose and insulin levels. Moreover, the researchers observed signs of β-cell regeneration in the omega-3-treated T1D mice.

These findings suggest that increasing intake of omega-3 FAs could have beneficial effects by reducing the autoimmune responses that lead to T1D.

More information: Xinyun Bi et al, ω-3 polyunsaturated fatty acids ameliorate type 1 diabetes and autoimmunity, *Journal of Clinical Investigation* (2017). DOI: 10.1172/JCI87388