

Injections of a novel protein reduced artery blockage by enhancing lymphatic vascular function in mice

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Injections of a protein associated with healthy lymphatic vessel function reduced artery blockage known as atherosclerosis in mice. This finding could one day provide a new way to prevent and treat heart disease and stroke through targeting the lymphatic system, according to the preliminary research presented at the American Heart Association's Vascular Discovery Scientific Sessions 2019.

Researchers set out to determine how [early exposure](#) to the protein would affect plaque build-up that can lead to heart disease, and if the protein could reduce or even stave off blockages. They found mice that received injections of a protein called VEGF-C 152S experienced about a 30% reduction in plaque in the arteries compared to mice that did not receive the protein.

Young mice, genetically modified to lack LDL receptors, received injections three times per week for four weeks while on a regular diet. Then, the shots were discontinued while the mice fed a high-fat diet for eight weeks to induce atherosclerosis before resuming a regular diet for another four weeks. The VEGF-C 152S injections managed to cut down plaque build-up despite eight weeks on a high-fat diet. Additionally, plaque in the injected mice was more stable, a benefit that could potentially reduce strokes from plaque breaking off and traveling to the brain.

The protein, VEGF-C 152S, is associated with reduced inflammation and improved lymphatic blood vessel function. It is also critical to the development of new lymphatic vessels.

Researchers said the lymphatic system, a network of tissues and organs typically associated with clearing the body of waste, is understudied in atherosclerosis. However, the connection between

the lymphatic system and cholesterol accumulation within the artery wall may yield new insights.

"Our findings show that atherosclerosis can be curbed, perhaps even prevented, if we target the lymphatic system early on," said Andreea Milasan, M.Sc., lead author of the study and a Ph.D. candidate in the laboratory of Dr. Catherine Martel at the Montreal Heart Institute in Montreal, Quebec, Canada. "The movement of lymph through the body affects the clearance of cholesterol and inflammatory components that are stuck in the artery wall, and the [lymphatic system](#) is now emerging as a potential contributor to understanding heart health and the development of cardiovascular disease."

Milasan said researchers need to zero in on the exact biological mechanisms behind how targeting lymphatic function early enough in patients at risk of developing coronary [heart disease](#) could protect blood vessel health.

Provided by American Heart Association

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