

New discovery on how omega-3 fatty acids can reduce atherosclerosis

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A receptor activated by substances formed from omega-3 fatty acids plays a vital role in preventing inflammation in blood vessels and reducing atherosclerosis, a new study from Karolinska Institutet in

Sweden published in the *Journal of Clinical Investigation* reports. The discovery can pave the way for new strategies for treating and preventing cardiovascular disease using omega-3 fatty acids.

Cardiovascular disease is the most common cause of death globally and a serious public health problem. Atherosclerosis is associated with [chronic inflammation](#) in the [blood vessels](#). Inflammation is normally controlled by stop signals called resolvins, which switch off the inflammation and stimulate tissue healing and repair through a process called resolution of inflammation. Resolvins are formed from omega-3 fatty acids and bind to and activate a receptor called GPR32.

"We've found that this receptor is dysregulated in atherosclerosis, indicating a disruption in the body's natural healing processes," says the study's first author Hildur Arnardottir, assistant professor at the Department of Medicine, Solna, Karolinska Institutet. "This discovery can pave the way for completely new strategies for treating and preventing atherosclerosis by arresting inflammation in the blood vessels, while also turning on the body's healing processes with the help of [omega-3 fatty acids](#), for example."

The new study shows that signaling via the receptor actively stops inflammation in atherosclerotic blood vessels and stimulates healing. The researchers have studied [atherosclerotic plaque](#) and created a new experimental model with an over-expressed GPR32 receptor. The GPR32 receptor counteracted atherosclerosis and inflammation in the blood vessels, and resolvins that activate GPR32 enhanced the effect.

"We'll now be studying the mechanisms behind the failed management of inflammation in the blood vessels and how omega-3 mediated stop signals can be used to treat atherosclerosis," says the study's last author Magnus Bäck, senior consultant cardiologist and professor at the Department of Medicine, Solna, Karolinska Institutet.

More information: Hildur Arnardottir et al, The resolvin D1 receptor GPR32 transduces inflammation resolution and atheroprotection, *Journal of Clinical Investigation* (2021). [DOI: 10.1172/JCI142883](https://doi.org/10.1172/JCI142883)

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