

# Omega-3 fatty acids in fish oil can slow or reverse nerve damage from diabetes

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Blood glucose monitoring. Credit: Wikipedia

Approximately 50 percent of patients with diabetes suffer from nerve damage, or neuropathy. No cure exists, and the most effective treatment, keeping blood sugar in control, only slows neuropathy. A new study in the *Journal of Neurophysiology*, however, introduces a new alternative, omega-3 fatty acids found in fish oil. The study shows that fish oil supplements can restore the condition of nerves damaged from diabetes in mice.

"Diabetic neuropathy is a very costly and debilitating complication of diabetes. It is the leading cause of foot ulcers and nontrauma-related amputations, and the impact of diabetic neuropathy on the patient and family are unmeasurable," said Mark Yorek of the VA Medical Center in Iowa City, the study's lead investigator. Fish oil is an attractive treatment approach because "supplements are considered very safe and could be easily translated into everyday care. Fish oil would be easy to take, like a vitamin, and

should have few side effects when combined with other medications," explained Yorek.

Previous studies of obesity and diabetes have reported better [blood sugar](#) handling, liver function and reduced inflammation with omega-3 fatty acids treatment. The health benefits were attributed to protective molecules produced from omega-3 fatty acids, including one type called resolvins. The research group had previously observed that diets enriched with [omega-3 fatty acids](#) from [fish oil](#) improved [diabetic neuropathy](#) in rats with Type 1 and Type 2 diabetes, and in this new study they examined why.

Researchers used a [mouse model](#) of diabetes to study the effect of fish oil. Diabetic mice were fed a high-fat diet and treated with daily injections of resolvin or given a high-fat diet in which half the fat came from fish oil. The results were compared to healthy, non-diabetic mice.

The researchers found that untreated diabetic mice had diminished sense of touch in their paws that corresponded to fewer nerves in the paw's skin and slower transmission of signals along the nerves. The eyes of untreated diabetic mice also had fewer nerves. Though dietary fish oil and resolvin did not lower glucose levels closer to healthy range, they improved nerve health in terms of density and sensory signal transmission. The researchers also observed that resolvin stimulated nerve cells to grow.

"Even though a lot more work needs to be done, including clinical trials with human subjects, our animal studies suggest that fish oil can reverse some of the harmful effects of diabetes on the nerves. Our intent is to do more animal studies to demonstrate that fish oil treatment can reverse the harmful effects of diabetes on nerves even after a long period of poorly controlled diabetes. After completion of this work, we hope to begin studies with diabetic patients with neuropathy," Yorek said.

The article "Effect of enriching the diet with menhaden oil or daily treatment with resolvin D1 on neuropathy in a mouse model of Type 2 [diabetes](#)" is published ahead-of-print in the *Journal of Neurophysiology*.

**More information:** "Effect of enriching the diet with menhaden oil or daily treatment with resolvin D1 on neuropathy in a mouse model of type 2 diabetes." *Journal of Neurophysiology*, Published 29 April 2015 Vol. no. , [DOI: 10.1152/jn.00224.2015](#)

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