

Additional benefit of omega-3 fatty acids for the clearance of metabolites from the brain

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New research published online in *The FASEB Journal* suggests that omega-3 polyunsaturated fatty acids, which are found in fish oil, could improve the function of the glymphatic system, which facilitates the clearance of waste from the brain, and promote the clearance of metabolites including amyloid- β peptides, a primary culprit in Alzheimer's disease.

To make this discovery, scientists first used transgenic fat-1 mice, which express high endogenous omega-3 polyunsaturated [fatty acids](#) (PUFAs) in the brain, to investigate the effect of omega-3 PUFAs on the clearance function of the glymphatic system. Compared to the wild-type mice, the fat-1 mice with enriched endogenous omega-3 PUFAs significantly promote the clearance function of the lymphatic system, including the A β clearance from the brain. Wild-type mice were supplemented with [fish oil](#), which contains high concentrations of omega-3 PUFAs, and found that fish oil-supplemented mice also improved the clearance function of the glymphatic system compared to the control mice without [fish oil supplementation](#). Omega-3 PUFAs help maintain the brain homeostasis, which may provide benefits in a number of neurological diseases, such as Alzheimer's disease, traumatic brain injury, and sleep impairment, among others.

"These now-famous fatty acids have been the subject of major studies both in academia and industry. Just when we thought we had heard everything, here is something new, and it is provocative indeed," said Thoru Pederson, Ph.D., Editor-in-Chief of *The FASEB Journal*. "This

study should not turn attention away from the roles of these substances in maintaining vascular health, but neither should they restrict our view. The brain is an extremely vascularized organ, while we might also bear in mind that [omega-3 fatty acids](#) may impact neurons, glia, and astrocytes themselves."

More information: H. Ren et al, Omega-3 polyunsaturated fatty acids promote amyloid- clearance from the brain through mediating the function of the glymphatic system, *The FASEB Journal* (2016). [DOI: 10.1096/fj.201600896](#)

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