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Neurodegenerative Diseases: The Effect of Omega-3 Fatty Acids in Neuroinflammation.

Siddhi S Thakur and Miss. Jagruti R Salve
Sahakar Maharshi Kisanrao Varal Patil College of Pharmacy, Nighoj, Ahilyanagar

Abstract: *Major Depressive Disorder (MDD) is a common mental health condition. It develops because of many changes happening in the brain, including inflammation, damage to nerve cells, and problems in how brain cells work.Microglia are special immune cells in the brain. When something goes wrong in the brain during MDD, these cells release inflammatory chemicals.Damaged or stressed brain cells release signals called DAMPs (Damage-Associated Molecular Patterns). These signals act like alarms, telling the microglia that something is wrong. This activates the microglia and causes them to release more inflammation-producing chemicals.(1)Recent research shows that long-chain omega-3 fatty acids (n-3 LC-PUFAs) help fight inflammation by producing special molecules called specialized pro-resolving mediators (SPMs). These include resolvins, maresins, and protectins. SPMs play an important role in ending inflammation and helping tissuesheal.Because of this, SPMs may help reduce brain inflammation, protect brain cells, and possibly lead to new treatments for brain diseases caused by inflammation.(2)*
Studies show that taking omega-3 supplements—especially those with DHA and EPA—may improve thinking ability and reduce brain inflammation in people with Parkinson's and Alzheimer's disease.Omega-3 fatty acids work by controlling inflammation in the brain and helping nerve cells communicate.DHA also helps by reducing the buildup of harmful proteins, such as tau and amyloid-beta (Aβ), which are linked to Alzheimer's disease.We can get omega-3s from foods like fatty fish, but some people may still need supplements, especially if they don't eat these foods often or their bodies can't make enough omega-3s.Adding omega-3s to common foods is another simple way to increase intake.(3).

Keywords: Inflammation, Microglia, Braindiseases, omega-3 fatty acid, Alzheimer's, Parkinson's, DHA, EPA, resolvins.

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