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Review Article

Promising Effect of Fish Oil against Alzheimer's Disease

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Abstract

Alzheimer's disease is a brain disorder and about 5.3 million American s are living with Alzheimer's. Oily fish have a lot of omega-3 fatty acids. The omega-3 fatty acid DHA found in fish oil which increases the production of LR11, a protein that is found at reduced levels in Alzheimer's patients. DHA is essential for parental brain development and maintenance of brain function. Due to the deficiency in the level of DHA can cause Alzheimer's disease. For the treatment of Alzheimer's fish oil have yet to achieve the success, for this reason fish oil are the most effective medicine against Alzheimer's.

Key words: Fish oil; Alzheimer's disease.

Introduction

Alzheimer's disease is devastating both to the effected person and to their family and it is the most common form of mental decline [1] in older adults. Now four million people in the United States afflicted with Alzheimer's, and affecting about 10 percent of people over age 65 and more than one-third of those over age 85 [2]. Fish oil is derived from the tissue of oily fish which contain two fatty acid DHA (Docosa Hexaenoic Acid) and Eicosa Pentaenoic Acid (EPA). Eating these fish one or two times a week has been shown convincingly to reduce the risk of sudden death in Alzheimer's. Several studies show that, in Alzheimer's disease, blood levels of omega-3 fatty acids are low and in older people. Louisiana State University researchers found that, fish oil may help protect the brain from cognitive problems associated with Alzheimer's disease [3]. Omega-3 Fatty Acid (Docosa Hexaenoic Acid) Increases SorLA/LR11, a Sorting Protein with Reduced Expression in Sporadic Alzheimer's disease (AD) [4]. DHA (Docosa Hexaenoic Acid), a major component of fish oils, is an absolute requirement for the development of the human central nervous system and the continuous maintenance of brain cell function. DHA is an important part of the plasma membranes of nerve (neuronal) cells and is essential in the maintenance of their fluidity and integrity [5]. David Geffen School of Medicine, UCLA and associate director of UCLA's Alzheimer Disease Research Center, say that omega-3 fatty acid Docosa Hexaenoic Acid (DHA), which is found in fish oil, raises the production of LR11 and LR11 is a protein which exists at excessively low levels among Alzheimer's disease patients [4]. The national Alzheimer's Association estimates that 5.1 million Americans are currently afflicted with the disease and predicts that the number may increase to between 11 million and 16 million people by the year 2050 [6].

Chemistry of Omega-3 fatty acids

Omega-3 fatty acids are Alpha-Linolic Acid (ALA), Eicosa Pentaenoic Acid (EPA) and Docosa Hexaenoic Acid (DHA) [7]. Fish and fish oil contain two fatty acids like Docosa Hexaenoic Acid (DHA) and Eicosa Pentaenoic Acid (EPA). Docosa Hexaenoic Acid (DHA) is 22 carbons long and has six double bond with n-3 configuration. This is poly unsaturated compound have either 3,5 and 6 double bond in the carbon chain in the position number of 18, 20, and 22. It is already reported that, fish oil and fish oil supplement contain 18% EPA and 12 % of DHA [8].

Mechanism of action of omega 3 fatty acid against Alzheimer's

Pre-administration of Docosa Hexaenoic Acid (DHA) increases the Cortico-Hippocampal Docosa Hexaenoic Acid/Arachidonic Acid molar ratio and decrease in neuronal apoptotic product. Pre-administration of docosahexaenoic acid, increases the cortico-hippocampal reduces glutathione levels and glutathianone reductase activity and suppressed the increase in lipid peroxide and reactive oxygen species levels in the cerebral cortex and hip-

pocampus of Alzheimer's disease [9]. DHA is essential for parental brain development and maintenance of brain function. Due to the deficiency in the level of DHA can cause Alzheimer's disease. The loss of DHA in AD may reflect its propensity for free radical-mediated lipid per oxidation which cause the conversion to neuroprostanes which are elevated in AD.

Alzheimer Disease Research Center and his colleagues report that Docosa Hexaenoic Acid (DHA) found in fish oil increases the production of LR11, a protein that is found at reduced levels in Alzheimer's patients and which is known to destroy the protein that forms the "plaques" associated with the disease. The plaques are deposits of a protein called beta amyloid that is thought to be toxic to neurons in the brain, leading to Alzheimer's. Since having high levels of LR11 prevents the toxic plaques from being made, low levels in patients are believed to be a factor in causing the disease.

Diet and Alzheimer's disease

Individuals with diets rich in fish, the food with the most Docosa Hexaenoic Acid (DHA), have a significantly lower chance of developing Alzheimer Disease. Low concentrations of Eicosa Pentaenoic Acid (EPA) and DHA in elderly populations increase the chance of accelerated cognitive decline. The brain is highly dependent on DHA for its structure and function, and low amounts in the brain have been linked to depression, schizophrenia, memory loss and a higher chance of developing AD [10]. Patients who died with AD had significantly less DHA compared with patients not having AD at death. It is also reported that, people who consume two or more fish meals per week have a reduced chance of Alzheimer Disease (AD). Tingling sensation of the nerves, memory and mental abilities is decrease due to the deficiency of omega-3 fatty acid. For this reason, humans must consume DHA already preformed in fish oil or fish oil supplements.

Conclusion

Recently, the new Research scientist community is being emphasized the need of omega-3 fatty acids in fish oil are important in brain function and could protect against Alzheimer's. For the treatment of Alzheimer's fish oil have yet to achieve the success, for this reason fish oil are the most effective medicine against Alzheimer's. Seafood can be expensive, but one or two fish oil supplements per day will to maintaining the levels of omega 3 fatty acids in the body. It is also suggested that eating oily fish one to two times a week may indeed reduce the risk of Alzheimer's and the person who are unable to take fish due to allergic or who cannot obtained fish they can take one fish oil capsule (1000 mg) per day. Omega-3 rich may be beneficial in reducing risk for AD, but it is unclear how omega-3 impacts AD pathogenesis.

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