Results from trials of DHA in Alzheimer's disease and age-related cognitive decline

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Results from two large studies using DHA, an omega 3 fatty acid, were reported today at the Alzheimer's Association 2009 International Conference on Alzheimer's Disease (ICAD 2009) in Vienna.

One of the trials was conducted by the Alzheimer's Disease Cooperative Study (ADCS) supported by the National Institute on Aging (NIA), and the second by Martek Biosciences Corporation (Martek), the primary company that makes algal DHA for supplementation. The NIA trial lasted 18 months and was conducted in people with mild to moderate Alzheimer's. Martek's trial was six months, and the compound was tested in healthy people to see its effect on "age related cognitive decline" (ARCD). Both studies used Martek's algal DHA.

The results of the ADCS trial show no evidence for benefit in the studied population. The Martek trial showed a positive result on one test of memory and learning, but that study was in healthy older adults, not people with Alzheimer's or another dementia. The results need confirmation, as is standard scientific practice.

"These two studies - and other recent Alzheimer's therapy trials - raise the possibility that treatments for Alzheimer's must be given very early in the disease for them to be truly effective," said William Thies, PhD, Chief Medical & Scientific Officer at the Alzheimer's Association. "For that to happen, we need to get much better at early detection and diagnosis of Alzheimer's, in order to test therapies at earlier stages of the disease and enable earlier intervention."

Other research studies from ICAD 2009 show advances made in biomarkers and early detection from the Alzheimer's Disease Neuroimaging Initiative (ADNI), and also survey results from doctors about the enablers and barriers they face in diagnosing people with Alzheimer's.

DHA (docosahexaenoic acid) is naturally found in the body in small amounts, and is the most abundant omega 3 fatty acid in the brain. DHA oil is abundant in some marine microalgae, which provide the DHA that makes fatty fish a good source of DHA. Dietary DHA is also available in foods enriched with algal DHA or fish oils, and dietary supplements. Previous animal studies and epidemiology in humans suggested that DHA may be beneficial in people with Alzheimer's.

Alzheimer's Disease Cooperative Study 18-Month DHA Trial in Alzheimer's Disease

Researchers from the National Institute on Aging (NIA)-supported Alzheimer's Disease Cooperative Study (ADCS), led by Joseph Quinn, MD, Associate Professor of Neurology at Oregon Health and Sciences University, conducted a double blind, randomized, placebo-controlled clinical trial comparing DHA and placebo in 402 people (average age=76) diagnosed with mild to moderate Alzheimer's at 51 sites in the U.S.

At the beginning of the trial, all participants had a dietary DHA intake of less than 200 mg per day. Subjects were treated with DHA or placebo at a dose of two grams per day for 18 months. Those participants already taking approved Alzheimer's drugs could continue taking them during the trial. Co-primary outcomes were rate of change on the Alzheimer's disease assessment scale-cognitive (ADAS-cog) and rate of change on Clinical Dementia Scale-sum of the boxes (CDR-SOB). These two measures are the current standard tests used by FDA when assessing new Alzheimer's drugs.

According to the researchers, treatment with DHA clearly increased blood levels of DHA, and also appeared to increase brain DHA levels, based on a measured increase of DHA in study participants' cerebrospinal fluid (CSF). However, DHA treatment did not slow the rate of change on tests of mental

function (ADAS-cog), global dementia severity status (CDR-SOB), activities of daily living (ADL), or behavioral symptoms (NPI) in the study population as a whole. There was no different treatment effect between the mild and moderate Alzheimer's patients.

"These trial results do not support the routine use of DHA for patients with Alzheimer's," Quinn said.

In a pre-planned exploratory data analysis, study participants were divided according to whether or not they carried the "e4" version of the "ApoE" gene. ApoE-e4 increases the risk of developing Alzheimer's but does not appear to modify the rate of disease progression. In the people who had an ApoE-e4 gene, the researchers found no benefits of DHA treatment. In contrast, those without the ApoE-e4 gene who received DHA had a slower rate of decline on the primary test of mental function (the ADAS-cog). A trend in the same direction was seen on the Mini-mental state examination, another test of mental function.

"This is an intriguing exploratory result," said Quinn. "However it must be treated with appropriate caution. The finding requires further study for confirmation."

"One of the issues raised by this study - and other recent Alzheimer's and mild cognitive impairment therapy trials - concerns a possible interaction between certain therapies and genetic status. This issue needs to be explored more completely in future trials," Thies added.

Memory Improvement with DHA Study (MIDAS)

Researchers at Martek Biosciences Corporation examined the effects of algal DHA as a possible neuroprotective nutritional supplement for ARCD in their Memory Improvement with DHA Study (MIDAS).

Scientists led by Karin Yurko-Mauro, PhD, Associate Director of Clinical Research at Martek, conducted a randomized, double-blind, placebo-controlled, multi-center, six month study to determine the effects of 900 mg per day of algal DHA on improving cognitive functions in 485 healthy older people (average age=70) with mild memory complaint. The primary outcome measure was a change from baseline in CANTAB Paired Associate Learning (PAL), a visuospatial episodic memory test.

After six months, the researchers found that the study participants taking DHA supplements made significantly fewer errors on the PAL compared to when they started the study (-1.63 ± 0.76, p

They also observed a significant decrease in heart rate in those taking DHA (change from baseline of -3.2 vs. -1 BPM, p

The researchers observed no treatment-related serious adverse effects in the study, and the adverse effects profile for DHA was the same as for the placebo.

"In our study, healthy people with memory complaints who took algal DHA capsules for six months had almost double the reduction in errors on a test that measures learning and memory performance versus those who took a placebo," Yurko-Mauro said. "The benefit is roughly equivalent to having the learning and memory skills of someone three years younger."

Source: Alzheimer's Association