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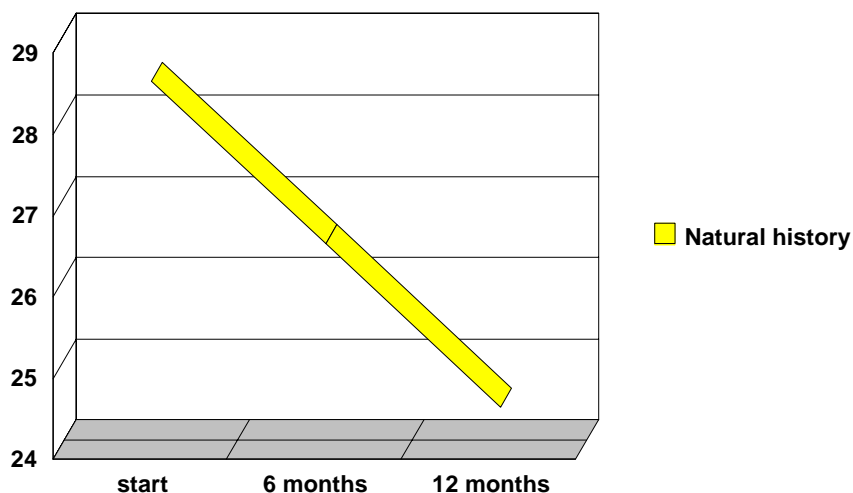
## STUDY SHOWS OMEGA-3 FATTY ACIDS PREVENT MEMORY DECLINE IN ALZHEIMER'S DISEASE PATIENTS

*More than 200 early-stage Alzheimer's patients included in placebo-controlled study*

LYSAKER, Norway (October, 09, 2006) --Results from a placebo-controlled intervention study in patients with early stage Alzheimer's disease were presented by Yvonne Freund-Levi, MD, of the Karolinska Hospital in Stockholm, Sweden at the 10th International Conference on Alzheimer's Disease and Related Disorders (ICAD) in Madrid. Dr. Freund-Levi, a psychiatrist and geriatrician, and colleagues were able to demonstrate that patients given an omega-3 concentrate high in DHA (docosahexaenoic acid), often known as the "brain-omega-3 fatty acid," halted further memory decline while patients on placebo continued to deteriorate. The study was published in the October 2006 issue of Archives of Neurology.

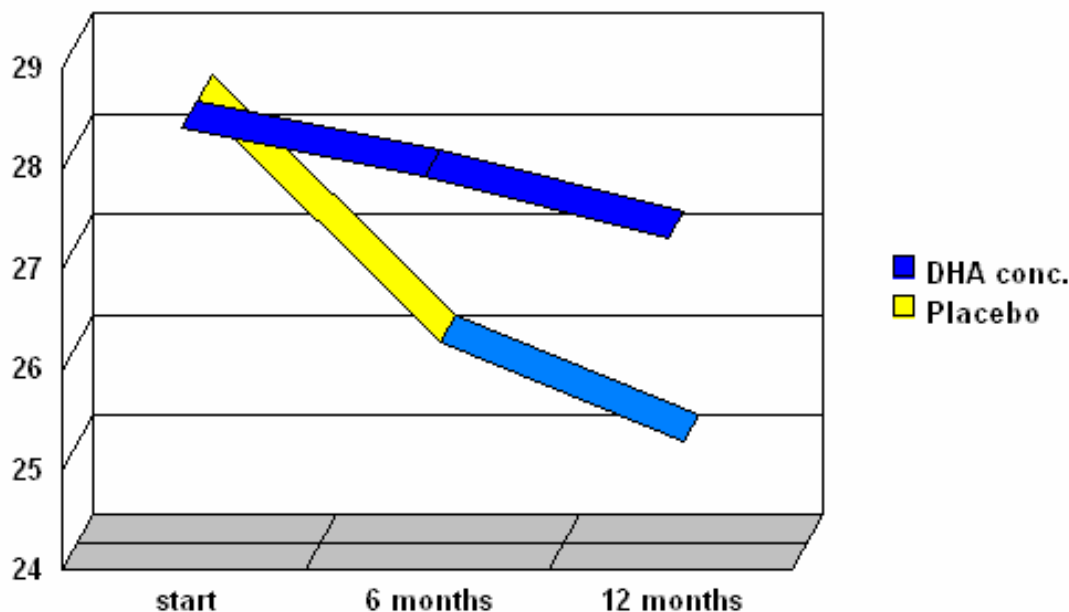
Two hundred four (204) patients in an early stage of Alzheimer's diseases were included in the study and randomly given EPAX 1050 TG, a pharmaceutical grade omega-3 concentrate high in DHA, or placebo. The memory capacity was measured with the MMSE (Mini Mental State Examination). Normally these patients will lose four points on the MMSE scale in one year due to the progressive pattern of the diseases (Fig. 1).

Fig. 1 Natural history of memory decline in patients with early stage of Alzheimer's Dementia, MMSE scale.



The intervention group was given four grams of the DHA concentrate for 12 months. The placebo group was given corn oil for six months and subsequently the DHA concentrate for the next six months. All patients were treated with acetylcholine esterase inhibitors, standard treatment for Alzheimer's today. One hundred seventy four (174) patients completed the study. The patients on active treatment did not demonstrate significant progression of memory decline while the placebo group closely followed the natural history with a two-point memory decline in six months. However, when switched to active treatment, memory decline was arrested even in this group (Fig. 2).

Fig. 2 Patients on active treatment halted memory decline while the placebo group continued to deteriorate. When switched to active treatment even this group halted further memory decline.



“These results are very positive and rather unsuspected,” said Dr Freund-Levi. “Acetylcholine esterase inhibitors are effective to some extent, but they do not inhibit memory decline. The DHA concentrate seems to do just that.”

### About Alzheimer's Disease

Alzheimer's disease is caused by deposition of pathologic proteins called amyloid on the surface and within brain cells leading to cell death and shrinkage of the brain. This amyloid-beta peptide is derived from a normal cell membrane protein which is located in the frontal and temporal brain, regions mainly engaged in intellectual functions. Why this normal protein deteriorates forming amyloid having toxic effects on brain cells has been a matter of scientific interest for many years.

Amyloid peptides are formed by cleavage of the normal protein chain by specific enzymes, called secretases. Some of the secretases produce nonamyloidogenic fragments while others generate a variety of potentially amyloidogenic species. The reason for this pathophysiologic reaction is not known but it is probably related to genetic modifications suppressing the normal and promoting formation of potentially harmful protein secretases. Amyloid, as such, is nothing more than accumulation of peptide chains, not in the normal configuration of spacious chains, but solid packing of amyloid fibrils practically resistant to degradation and removal. When accumulation has started and a critical mass of amyloid has been deposited, a point of no return seems to be reached with only little effect of degradation mechanisms.

### Alzheimer's Disease and DHA

Whether these mechanisms are normal events in the aging process of the organism or a pathological feature induced by some risk factors is a matter of discussion. DHA is concentrated in brain cells and exerts actions related to normal cell function such as propagation of electrical signals conducted in the neurons. DHA is decreased in patients with Alzheimer's (1) but low serum content of DHA has even been correlated with general memory decline in people not diagnosed with Alzheimer's disease (2).

Scientists have wondered what the delicate function of DHA is in the brain related to memory. Epidemiologic studies in healthy people have clearly demonstrated a protective effect against development of Alzheimer's by eating fish. Cohort studies from Holland (3), France (4), and the United States (5) have unanimously demonstrated lower risk of developing dementia in people with a regular intake of seafood compared to non-fish eaters.

Recently a neuroprotective effect of DHA has been demonstrated in an animal model of brain damage (6). Other experiments with so called transgenic mice developing neuron amyloid resembling human amyloid deposition in brain cells leading to Alzheimer's disease have provided better understanding of the pathophysiology of the diseases. These animals provide a tool for development of new therapeutic regimes such as DHA. One study demonstrated a protective effect of DHA on brain cell death (7). Another study showed positive effects in the prevention of amyloid formation in the mouse brain (8). Together these studies confirm the protective and even preventive effect of DHA or its metabolites in Alzheimer's disease.

"We are now starting to realize the importance of DHA in the brain as being not only a structural component of brain cells, but moreover, a natural compound guarding the aging brain cells from degradation by neurotoxic mechanisms," said Dr. Freund-Levi. "In a clinical context this would mean that DHA normally integrated in the nerve cell wall has protective effects against brain cell death induced by the pathologic formation of amyloid as well as a prophylactic effect against the formation of amyloid itself. At this stage we do not know whether formation of amyloid beta peptide is a degenerative function of aging or induced by some other pathological event in the brain. However, DHA and its metabolites seem to exert a preventive effect against development of brain cell death."

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