

## Daily Vitamin B Tablets Shown to Decrease the Rate of Brain Shrinkage in Patients with Mild Cognitive Impairments

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Oxford University researchers have recently discovered that B vitamins significantly reduced the risk of progression of brain shrinkage, or atrophy, in subjects with mild cognitive impairment. The two-year randomized clinical trial was the largest to study the effect of B vitamins on mild cognitive impairment, and one of the first disease-modifying trials in the field of Alzheimer's disease to show positive results in older adults.

Mild cognitive impairment (MCI) is thought to be a precursor in the evolution of Alzheimer's dementia and is often referred to as incipient dementia in that it frequently leads to dementia and Alzheimer's disease. Approximately 1 in 6 elderly people over the age of 70 has MCI, experiencing difficulties with memory, language, or other mental functions, but not to a degree that interferes with daily life. Around half of people with MCI go on to develop dementia - mainly Alzheimer's disease - within five years of diagnosis.

It is known that certain B vitamins (folic acid, vitamin B6 and vitamin B12) control levels of the amino acid homocysteine in the blood, and high levels of homocysteine are associated with an increased risk of Alzheimer's. The Oxford researchers thus tested whether supplementation of the B vitamins that lower homocysteine could slow the higher rate of brain atrophy observed in MCI. During the two-year trial, 271 individuals over the age of 70 with MCI were enrolled and asked to take either a combination of high-dose folic acid, vitamin B6 and vitamin B12 or a placebo. A subset (187) volunteered to have cranial MRI scans at the start and finish of the study. The researchers assessed progression of whole brain atrophy over a two-year period and published their findings in the journal PLoS ONE.

The Oxford researchers discovered that on average the brains of those taking the folic acid, vitamin B6 and B12 treatment shrank at a rate of 0.76% a year, while those in the placebo group had a mean brain shrinkage rate of 1.08%. Subjects with the highest levels of homocysteine showed the most benefit, showing atrophy rates on treatment that were less than half of those on placebo. Along with rate of brain shrinkage, the team also monitored cognitive test scores, revealing that those with the slowest rate of shrinkage scored more strongly. Since the rate of brain atrophy is known to be more rapid in those with MCI who go on to develop Alzheimer's, these findings suggest the possibility that the vitamin treatment could slow down the development of the disease. Clinical trials are currently in process to test this theory.

As there are no currently proven treatments to slow the progression of mild memory problems, this study offers the possibility of a new intervention. According to Professor David Smith of the Department of Pharmacology at Oxford University, a co-leader of the trial, "it is our hope that this simple and safe treatment will delay the development of Alzheimer's disease in many people who suffer from mild memory problems."

Currently, it is not known whether this type of high dose supplementation would be benefit to our patients whom already have the disease or a dementing illness. We cannot recommend routine testing of homocysteine levels at this time and must await further studies for this clarification. However, if not performed recently, you can discuss with your physician that provides care for your loved one, as to whether it would be appropriate to check a vitamin B12 level to determine deficiency.