

The H Factor

Patrick Holford, BSc, DipION, FBANT, NTCRP, is a leading spokesman on nutrition and mental health and founder of both the Food for the Brain Foundation and the Institute for Optimum Nutrition, initially trained in psychology. He was one of the first promoters of the importance of zinc, essential fats, low-GL diets, and homocysteine-lowering B vitamins and their importance in mental health and Alzheimer's prevention. He is the author of 47 books, translated into over 30 languages, including *Upgrade Your Brain*. He is a retired visiting professor at the University of Teesside and is in the Orthomolecular Medicine Hall of Fame.

"HOMOCYSTEINE-LOWERING TREATMENT [WITH B VITAMINS] SEEMS THE MOST PROMISING INTERVENTION FOR ALZHEIMER'S DISEASE PREVENTION". THESE ARE NOT MY WORDS BUT THE CONCLUSION OF THE LARGEST-EVER REVIEW OF 396 STUDIES ON ALZHEIMER'S PREVENTION [1] THE US NATIONAL INSTITUTES OF HEALTH (NIH) RESEARCH ATTRIBUTES 22% OF THE RISK FOR ALZHEIMER'S TO RAISED HOMOCYSTEINE, LOWERED BY B VITAMINS – SPECIFICALLY B6, B12, AND FOLATE, WHICH IS RICH IN GREENS (THINK FOLIAGE).

Homocysteine, which is a simple and inexpensive blood test, available from foodforthebrain.org/tests. If your level is above 11 mcmol/l, this is consistent with accelerated rate of brain shrinkage. 40% of over 60-year-olds in the US have raised homocysteine [2]] This is. This is often a function of poor absorption of B12, which is only found in animal-origin foods – fish, meat, dairy, and eggs. But if your homocysteine is above 10, the recommendation is to supplement not the basic RDA of B12, which is 2mcg, but 500mcg, together with 20mg of B6 and at least 400mcg of folate. There are many homocysteine-lowering supplements that provide these in combination. It might cost you 10 cents a day.

Watch this <u>film</u> to understand how homocysteine accumulates and why B vitamins are vital for a process called methylation.

Homocysteine is not just a risk factor – it is considered causal because lowering it with B vitamins has produced more than a 50% reduction in the rate of brain shrinkage and virtually no further memory decline in those with pre-dementia [3].] The B vitamin treatment actually reduced shrinkage of the Alzheimer's related areas of the brain by almost 9 times in a year, compared to placebo.[4]This reduction in the rate of brain shrinkage goes up to 73% in those with sufficient omega-3 DHA [5], another prevention essential. Why? Because making brain cells requires omega-3 to be bound into the cell membrane, a process dependent on these B vitamins.

Homocysteine isn't just an indicator of insufficient B vitamins. It is also toxic to the brain and the arteries, thus very strongly linked to vascular dementia. Having a raised



homocysteine has been shown to increase the risk of blood vessel damage in the brain by 17 times. [6]

If you give a builder a hammer, do you get a house? No. If you give them a bag of nails, do you get a house? No. However, if you give them both you get a house. B vitamins are the hammer, and omega-3 is the nail. That's why testing your homocysteine level, and supplementing B vitamins if your level is above 10, is one of the most effective and inexpensive prevention steps you can take. A home test homocysteine kit is available in the UK, US and EU from foodforthebrain.org/tests. If you would like to take part in the Homocysteine project, visit foodforthebrain.org/Hproject.

Homocysteine is actually a biomarker for 100 diseases, mainly of the brain. You can read more about homocysteine, not just for Alzheimer's, and other ways to protect your brain in my book <u>Upgrade Your Brain</u>.

References:

- Yu JT, Xu W, Tan CC, Andrieu S, Suckling J, Evangelou E, Pan A, Zhang C, Jia J, Feng L, Kua EH, Wang YJ, Wang HF, Tan MS, Li JQ, Hou XH, Wan Y, Tan L, Mok V, Tan L, Dong Q, Touchon J, Gauthier S, Aisen PS, Vellas B. Evidence-based prevention of Alzheimer's disease: systematic review and meta-analysis of 243 observational prospective studies and 153 randomised controlled trials. J Neurol Neurosurg Psychiatry. 2020 Nov;91(11):1201-1209. doi: 10.1136/ jnnp-2019-321913. Epub 2020 Jul 20. PMID: 32690803; PMCID: PMC7569385.
- 2. <u>Pfeiffer CM, Osterloh JD, Kennedy-Stephenson J, Picciano MF, Yetley EA, Rader JI, Johnson CL.</u> <u>Trends in circulaGng concentraGons of total homocysteine among US</u>
- 3. <u>Smith, A.D. et al., 'Homocysteine-lowering by B vitamins slows the rate of accelerated brain atrophy in mild cognitive impairment: a randomized controlled trial', Public Library of Science ONE, 5(9) (2010)</u>
- 4. Douaud G et al., 'Disease-modification in MCI with homocysteine-lowering B vitamins slows atrophy of particular brain regions: the Vitacog trial.' The Journal of Nutrition, Health & Aging, Volume 15, Supplement 1, 2011
- 5. Jernerén F, Elshorbagy AK, Oulhaj A, Smith SM, Refsum H, Smith AD (2015). Brain atrophy in cognitively impaired elderly: the importance of long-chain ω-3 fatty acids and B vitamin status in a randomized controlled trial. Am J Clin Nutr. 2015 Jul;102(1):215-21
- <u>Teng Z, Feng J, Liu R, Ji Y, Xu J, Jiang X, Chen H, Dong Y, Meng N, Xiao Y, Xie X, and Lv P</u> (2022). Cerebral small vessel disease mediates the association between homocysteine and cognitive function. Front. Aging Neurosci. 14:868777. doi: 10.3389/fnagi.2022.868777