

# Elevated Homocysteine

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*This information is intended for the use of health care professionals. It has not been evaluated by the FDA and is not intended to diagnose, treat, cure or prevent any disease. You should consult a qualified health care provider for advice before beginning any new health care program.*

Nutrient	Product	Q/Day
Multi with high levels of active B Vitamins	Ultra Vites*	2
Essential Fatty Acids	Ultra Omega-Linic	2-4
Consider:		
Extra methyl donors	Spirulina capsules	6
	MSM-750	2-10

\* use a multi without Iron unless there is a known need for iron

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**Question:** Is elevated homocysteine a marker or a cause of brain damage?

**Yes!** It could be both. And, it is a clear indication that there is a problem in the metabolism.

A review of recent studies shows a correlation between low levels of the B Vitamins, Folic acid and B12, with high levels of homocysteine as a warning sign for dementia and Alzheimer's. But (I can hear you say) my multi has both folic acid and B12. Isn't that enough? **NO!**

As with the discussion below re: homocysteine elevation as a risk factor for cardiovascular disease, a high homocysteine level is a warning sign for a number of health concerns.

One reviewer of research involving Alzheimer's asked "At what point in the process is cognitive decline reversible, and what dose of nutrients confers protection?"

More detail information:  
<http://www.foodforthebrain.org/alzheimers-prevention/homocysteine-and-b-vitamins.aspx>

✓ **Did you know?** Many people have a genetic impairment - an inability to convert folic acid into its active form, L-MethylFolate

✓ **Did you know?** It has been postulated that the failure of folic acid therapy for various metabolic deficiencies was likely due to the fact that a B12 deficiency existed?

✓ **Did you know?** Riboflavin and Pyridoxine must be converted to their active forms in order for them to be used by the body. Riboflavin is critical for the conversion of the other B Vitamins.

✓ **Did you know?** Supplementation with any single B Vitamin is more effective when ALL the B Vitamins are present. This is the likely reason for failure of response from a single B Vitamin.

I have long known that Homocysteine elevation is a risk factor for cardiovascular disease. It is a nonprotein amino acid that is formed when methionine acts as a methyl donor in methylation reactions. Inborn errors of metabolism cause large elevations of both serum and urinary levels of homocysteine that are termed homocystinuria. In this monograph I am addressing the more moderate elevation, which is a risk factor for heart disease - and, as we now know, cerebral vascular disease - Alzheimer's.

The moderate elevations that are risk factors for cardiovascular disease are caused by actual or functional deficiency of vitamins which causes a problem in methyl transfer. This can be corrected most of the time by appropriate administration of Vitamins B12, Folic Acid and Vitamin B6. If one has a problem converting any of the B Vitamins to their active form in the body,

the B Vitamins must be supplied in their active form. Note from the discussion below that zinc and riboflavin can be involved in as well.

Elevation of homocysteine serum levels results from defective disposal of homocystein. Homocysteine is converted to methionine by remethylation. B12 and Folic Acid are necessary for this to occur. This is the only biochemical reaction in the human body where Folic Acid and B12 act as copartners. B12 deficiency results in a decrease in the production of tetrahydrofolate as well as methionine. In this way, a functional folate deficiency is produced. B2 (riboflavin) metabolites FMN (flavin mononucleotide) and FAD (riboflavin monophosphate) serve as cofactors for enzymes involved in metabolism of Folate and B12 in this pathway.

L-cysteine can be made by further metabolism of methionine. This step is known as transsulfuration pathway, and requires B6. Under normal metabolism, the body determines which of these two amino acids is needed.

**Ultra-Vites** has been formulated to provide more than adequate levels of the **active B vitamins** and bio available minerals. In fact, it provides high levels of all the critical nutrients. If there is inadequate response to Ultra-Vites consider adding **Spirulina** or **MSM 750** capsules which act as methyl donors.

## ESSENTIAL FATTY ACIDS

Elevated homocystine is one of a number of cardiovascular (CV) risk factors. Many, many studies show that fish oil lowers CV risk factors. **Ultra Omega-Linic** provides the fatty acids that are essential. The body needs both the preformed omega 6 (from black currant seed oil) and omega 3 fatty acids (from Alaska fish oil) to control inflammation, normalize lipid metabolism and for neurological structure and function. They also help control the pain of Arthritis.

These fatty acids are essential because the body **MUST** have them and it cannot make them from anything else you eat. They are in short supply in the typical Western diet, so supplementation is recommended to reduce CV risk factors.

## IN SUMMARY

It is obvious from this simplified discussion that an elevation of homocysteine can be caused by an actual or functional deficiency of Folic Acid, B6 (pyridoxine), B12 (cobalamin), B2 (riboflavin) or zinc. It is rather nonproductive (and very expensive) to determine which nutrient(s) is/are causing the elevation in the serum homocysteine levels. It is more practical and less expensive to use Ultra Vites. It has long been accepted by many that the B Vitamins work when all 8 are present. We now know that a large percentage of the population cannot make the metabolic conversion. Therefore providing them in their active form ensures bio availability.

Consider this easy way to prevent elevated homocysteine levels.

# SIMPLE SOLUTIONS FOR TERRIBLE HEALTH PROBLEMS

## Ultra Vites and Ultra Omega Linic

### AT RISK:

**Schizophrenia, Bi Polar disease or Severe Depression;  
Alzheimer's or Dementia; Cardiovascular disease**

*These statements have not been evaluated by the FDA.  
Products are not intended to diagnose, treat, cure or mitigate any disease.*



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