

B Vitamins May Offer Migraine Relief

By Stephen Daniells, 02-Apr-2009

Supplements of vitamins B6 and B12, and folic acid may reduce the frequency, severity and disability of migraines, according to new research from Australia.

Daily vitamin supplements were found to produce a two-fold reduction in migraine disability, according to scientists from the Genomics Research Centre (GRC) at Griffith University in Brisbane.

Previous studies by GRC identified a gene, known as MTHFR (methylenetetrahydrofolate reductase), which reportedly makes people susceptible to migraine attacks when there is a mutation or dysfunction in the gene (C677T).

The dysfunction leads to higher levels of the amino acid homocysteine, already linked to increased risk of stroke and other coronary diseases.

"These results provided compelling evidence that lowering plasma homocysteine levels via folic acid coupled with B6 and B12 vitamin supplementation improved health-related productivity and therefore quality of life for these patients," wrote the researchers, led by Professor Lyn Griffiths.

Migraine stats

About 12 - 15 per cent of people in the UK, (around nine million people), suffer from migraines, with twice as many women as men affected by the complaint.

The headaches are sometimes preceded by flashes of light, blind spots, tingling in the arms or legs, or anxiety. Sufferers generally experience a pounding sensation in one side of the head and many undergo nausea, vomiting, and extreme sensitivity to light and noise. The symptoms are often severe and debilitating, lasting anywhere between four and 72 hours.



Study details

According to findings to be published in an upcoming issue of *Pharmacogenetics and Genomics*, the GRC scientists recruited 52 people diagnosed with migraine with aura. The participants were randomly assigned to receive either vitamin supplements providing a daily dose of 2mg of folic acid, 25mg vitamin B6, and 400 micrograms of B12, or placebo, for six months.

Results showed a reduction in homocysteine levels by 39 per cent, compared to baseline, and statistically significant compared to placebo

Furthermore, the supplements were associated with a reduction in the prevalence of migraine disability from 60 per cent at the start of the study to 30 per cent after 6 months. No reduction was observed in the placebo group, said the researchers.

Reductions in the frequency of the headache and the severity of the pain were also observed in people in the B vitamin group, while no such changes were observed in the placebo group

The influence of genes

When considering the genotypes of the participants, Prof Griffiths and her co-workers report that the benefits were associated with MTHFR C677T genotype. Furthermore, carriers of the C allele responded better to people with TT genotypes.

"We found that C allele carriers responded better to treatment compared to TT genotypes in terms of homocysteine and migraine reduction. This finding may be explained by the idea that TT genotypes are genetically slower homocysteine metabolisers," said the researchers.

"That is, if all patients received the same vitamin dosage for the same period of time it would be expected that those with TT genotypes, having a reduced enzymatic rate, would metabolise less homocysteine over the treatment period compared to C allele carriers, thus resulting in a smaller reduction in homocysteine and consequent migraine symptoms.



"Indeed, it may be that TT genotypes although having a higher risk of disease actually require a larger dosage of vitamins to exhibit the same effect as C alleles. Further clinical trials of much larger patient cohorts are required to test this hypothesis," they added.

Prof Griffiths added that such trials will be undertaken, with the aim of elucidating the best dosage of B vitamins for individuals based on their genetic profile – personalized nutrition.

"The success of our trial - supported by the Brain Foundation, Janssens and Blackmores - has shown that safe, inexpensive vitamin supplements can treat migraine patients," said Prof Griffiths.

Previous studies had reported that B vitamins may benefit migraine sufferers with high-dose vitamin B2 (riboflavin) reported to help prevent migraines (European Journal of Neurology, 2004, Vol. 11, pp. 475-477).

Source: Pharmacogenetics and Genomics?In press?"The effects of vitamin supplementation and MTHFR (C677T) genotype on homocysteine-lowering and migraine disability" Authors: R. Lea, N. Colson, S. Quinlan, J. Macmillan, L. Griffiths

