

Has the time come for clinical trials on the antidepressant effect of vitamin D?

Simon N. Young, PhD

Co-Editor-in-Chief, *Journal of Psychiatry and Neuroscience*, and the Department of Psychiatry, McGill University, Montréal, Que.

A recent article in the *Archives of General Psychiatry* again raises the issue of vitamin D and depression.¹ In the largest study to date involving more than 1000 older adults, mean levels of 25-hydroxyvitamin D were significantly lower in those with minor depression and major depression compared with controls. The article concludes by asking whether the lower levels of vitamin D are a cause or consequence of depression. Although several studies have looked at the effect of vitamin D supplements on mood, most are not worth considering owing to poor design. However, 2 studies are of interest. In one, 44 healthy participants were studied in winter when vitamin D levels are low.² They were randomly assigned to 5 days of treatment with 400 or 800 IU of vitamin D₃ or placebo. Compared with placebo, both doses of the vitamin increased positive affect and decreased negative affect. The second study investigated the effect of ultraviolet light exposure. Exposure of skin to ultraviolet light, which converts cutaneous 7-dehydrocholesterol to vitamin D₃, is the most important source of vitamin D for most people. In an adaptation of a place preference test, normally used with experimental animals, frequent tanners used 2 different tanning beds over a period of 6 weeks.³ The beds were identical except that in one the ultraviolet light was filtered out. The participants reported they were more relaxed and less tense after exposure to the bed with ultraviolet light. When allowed to choose which bed to use, 11 of 12 participants chose the one with ultraviolet light.

The main dietary source of vitamin D is fish. The cross-national inverse correlation between fish consumption and depression⁴ has usually been interpreted as an association between omega-3 unsaturated fats and depression. However, if this association does reflect cause and effect, vitamin D is also a factor to consider.

Not all patients with seasonal affective disorder respond to bright light therapy. This may be because the dose is too low. However, exposure to sunlight in the summer means exposure to ultraviolet light and vitamin D synthesis, whereas ultraviolet light is filtered out in the lamps used in the treatment of seasonal affective disorder. Low levels of vitamin D, known to be common in winter, may contribute to seasonal affective disorder.

Treatment of depression with vitamin D is an idea worth testing in carefully selected populations. This includes those with low vitamin D levels, especially the elderly, who have an increased incidence of low vitamin D, and patients with seasonal affective disorder who do not respond to light therapy. If there are patients in whom vitamin D is an effective antidepressant, this is likely to be one of the most cost-effective treatments in psychiatry, and one with negligible side effects.

Competing interests: None declared.

References

1. Hoogendijk WJG, Lips P, Dik MG, et al. Depression is associated with decreased 25-hydroxyvitamin D and increased parathyroid hormone levels in older adults. *Arch Gen Psychiatry* 2008;65:508-12.
2. Lansdowne ATG, Provost SC. Vitamin D₃ enhances mood in healthy subjects during winter. *Psychopharmacology (Berl)* 1998;135:319-23.
3. Feldman SR, Liguori A, Kucenic M, et al. Ultraviolet exposure is a reinforcing stimulus in frequent indoor tanners. *J Am Acad Dermatol* 2004;51:45-51.
4. Hibbeln JR. Fish consumption and major depression. *Lancet* 1998;351:1213.

Correspondence to: Dr. S.N. Young, Department of Psychiatry, McGill University, 1033 Pine Ave. W, Montréal QC H3A 1A1; fax 514 398-4370; Simon.Young@mcgill.ca

J Psychiatry Neurosci 2009;34(1):3.