Clinical trial finds vitamin D increases telomerase activity

Posted on November 3, 2011 by Dr John Cannell

Telomeres are regions at the end of a chromosome, which protect the end of it from deterioration, the longer the better. The telomere regions reduce the degradation of genes near the ends of chromosomes by allowing for the shortening of chromosome ends, which necessarily occurs during chromosome replication. Over time, due to numerous cell divisions over your lifetime, the telomeres become shorter.

During cell division, if cells divide without telomeres, they would lose the ends of their chromosomes and the necessary information they contain. The telomeres are disposable buffers blocking the ends of the chromosomes; they are consumed during cell division, but then replenished by an enzyme, telomerase.

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In October, scientists at the Georgia Health Sciences University, led by Dr. Zhu, reported on the effect of vitamin D on telomerase activity in obese African Americans. They gave 60,000 IU per month for four months to one group and placebo to another group.

Zhu H, Guo D, Li K, Pedersen-White J, Stallmann-Jorgensen IS, Huang Y, Parikh S, Liu K, Dong Y. Increased telomerase activity and vitamin D supplementation in overweight African Americans. Int J Obes (Lond). 2011 Oct 11

The authors found that vitamin D increased telomerase activity by 19%. The authors wrote,

> *"Our data suggest that vitamin D may improve telomere maintenance and prevent cell senescence."*

That is, vitamin D is the repair and maintenance man of the human body. When you think about it, of all the things vitamin D does, it usually works by repairing and maintaining the human body.

One thing I didn't understand about their study was the dose response. They gave 60,000 IU per month (about 2,000 IU/day) but reported that vitamin D levels increased from 16 to 40 ng/ml and this was a study of obese subjects. I emailed the author, and he said they drew the last blood work, 25-30 days after the last dose of vitamin D. The vitamin D levels were higher than I would have expected.

I am leery of studies that use monthly doses, although this one showed an important positive effect. Primitive man didn't get sunshine one day a month and vitamin D levels fall the last two weeks after a monthly 60,000 IU dose, perhaps activating the enzyme that destroys activated vitamin D in the cells. I also wonder what the effect would have been if the subjects all took 2,000 IU/day (the equivalent of 60,000 IU/month). I don't know but predict it would have been more than a 19% increase in telomerase.