

Vitamin D Seen as Anti-Aging Ally

Sunshine-and-seafood vitamin dampens genes linked to damaging inflammation and oxidation

By Craig Weatherby

News from Norway offers strong signs that vitamin D is a strong anti-aging and disease-detering agent ... via anti-inflammatory effects.

Most major health problems are initiated or promoted by chronic, silent inflammation ... including cardiovascular disease, cancer, dementia, asthma, allergies, auto-immunity, and diabetes.

Coincidentally – or not, as the new evidence suggests – low vitamin D blood levels are linked to higher risk for cardiovascular disease, common cancers, osteoporosis, muscle weakness, infections, and autoimmune disease.

Vitamin D's newly confirmed effects on people's working genes give the nutrient attributes akin to the "antioxidants" in fruits, veggies, cocoa, tea, coffee, wild salmon, red shrimp, and krill.

Why does this discovery matter?

Higher blood levels of vitamin D are linked to reduced risk for at least two auto-immune disorders: type 1 diabetes and multiple sclerosis ... presumably through "normalizing" influences on the immune system.

(For more on this, see the [Vitamin D & Immunity](#) section of our news archive.)

But vitamin D has broad, hormone-like effects, and it has not been clear how it produces all of its apparent health-protections.

Cell studies show that vitamin D exerts anti-inflammatory effects by down-regulating expression of pro-inflammatory genes in immune system cells (monocytes and macrophages).

But until now, no one had measured vitamin D's effects on key gene sets in people.

Now, the encouraging results may signal a rise in the measureable health potential of diets rich in vitamin D.

Norwegian clinical study details the new attributes of vitamin D

For the first time, scientists report that vitamin D affect the expression of sets (groups) of genes linked to immune-system health, including inflammation control (Standahl Olsen K et al. 2013).

Researchers from Norway's University of Tromso analyzed genetic data from 218 middle-aged Norwegian women.

Then they looked for links between blood levels of vitamin D and the status of genes believed to discourage or promote the onset of major diseases.

Their analysis revealed that higher blood levels of vitamin D had beneficial effects on these gene sets ... benefits similar to those brought by dietary polyphenols.

Conversely, vitamin D deficiency promoted gene switches related to persistent inflammation and cell damage.

As they wrote, “Overarching gene sets ... were differentially expressed according to vitamin D status ... in line with the hypothesis that vitamin D limits pathological immune responses ...” (Standahl Olsen K et al. 2013)

The Norwegian women’s “gene expression pathways” were compared with their vitamin D status, with vitamin D sufficiency defined as levels over 50 nmol/l, and deficiency as levels below 37.5 nmol/l.

And indeed, their vitamin D status – either a sufficient or deficient blood level – was associated with that of the gene sets controlling their immune systems ... including key messenger chemicals and signaling pathways.

Three pathways related to innate immunity were more highly expressed in the vitamin D-deficient group, including ones governing the inflammatory response to infections.

The researchers also found links between vitamin D levels and the expression of pro-inflammatory genes ... which fits with the nutrient’s general anti-inflammatory actions.

The Norwegian team cautioned that their study only shows a correlation, not proof that vitamin D yields these gene changes, and that any conclusions would apply only to post-menopausal women.

And they noted that gene expression differences would perhaps be larger among a group of subjects with a wider range of vitamin D levels.

Anti-inflammatory diet and lifestyle help deter disease

Among other ill effects, chronic inflammation generates free radicals, which oxidize and thereby damage cell membranes and blood cholesterol.

Worse, the free radicals generated by inflammation trigger pro-inflammatory “switches” in our cells.

Each of those pro-inflammatory switches commands certain genes to “express”, which produces more inflammation and free radicals.

This self-reinforcing cycle leads to chronic, silent inflammation ... a proven driver of America’s major heart, immune-system, and metabolic diseases.

New Vitamin D effects echo berries, cocoa, and tea

Fortunately, the damaging inflammation cycle can be disrupted by diets rich in the “antioxidant” food factors that make berries, cocoa, and tea exceptionally healthful.

These food factors belong to a large family of beneficial compounds called polyphenols ... which do not exert direct antioxidant effects in the body... at least not to a very substantial extent. Instead, polyphenols help dampen oxidation and inflammation via so-called “nutrigenomic” effects on the gene switches in our cells.

The polyphenols in plant foods activate genes known to moderate inflammation and stimulate the body’s own antioxidant network ... thereby producing indirect anti-inflammatory and antioxidant effects.

Polyphenols’ nutrigenomic effects tend to moderate inflammation and stimulate the body’s own antioxidant network ... which includes enzymes, lipoic acid, CoQ10, melatonin, and vitamins C and E.

The richest known food sources of polyphenols are berries, plums, prunes, tea, coffee, extra virgin olive oil, natural (non-alkalized) cocoa, beans, and whole grains.

Sources

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