

Vitamins Add Vitality To Aging Chromosomes - Science News

Last month I wrote about how air pollution can shorten the length of [telomeres](#), natural protective caps on the tips of our [chromosomes](#). The older we get, the shorter the telomeres become on each new generation of cells — and the more vulnerable the genetic content of the youngest cells becomes to developing frayed edges, for want of a better image. Since almost all of us regularly breathe polluted air, must we just grit our teeth and await the consequences of fraying chromosomes?

Apparently not — if we get plenty of vitamins, especially the antioxidant types. At least among women, regular consumption of these vitamins leads to longer — and, therefore, younger looking — telomeres. Or so concludes a new study appearing in this month's *American Journal of Clinical Nutrition*.

Honglei Chen of the [National Institute of Environmental Health Sciences](#) and his colleagues mined data for their analyses from 586 participants of an ongoing [population](#) of healthy sisters of breast-cancer patients. Those sisters were from their mid-30s to mid-70s, and Chen's team deliberately recruited a disproportionately high number who were smokers, nonwhites or generally perceived to be encountering a lot of stress. (Why? Chemical stressors, such as air pollutants and chemicals the body produces during even mental [stress](#), have been shown to do a number on our cells and their DNA.)

The researchers sampled white blood cells from the women and then measured the length of telomeres capping the cells' chromosomes. Those telomere lengths were then correlated with information on vitamin intake from dietary questionnaires administered to each woman.

Among recruits taking vitamins, these supplements served as a major source of their total vitamin and mineral intakes. For instance, they tended to provide more than half of a woman's intake of vitamins C and E — the primary antioxidant vitamins, vitamin D, vitamin B-6 and -12, folate, iron and zinc. And they provided a third to half of a woman's intake of vitamins A, calcium, and beta-carotene.

Compared to women who didn't take supplements, those who regularly downed multivitamins had 5 percent longer telomeres — or, on average, an extra 273 [DNA base](#)

pairs. The shortened telomeres in women not taking multivitamins appear about 10 years older, the scientists argue, “since each year of age was associated with a 28 base-pair shorter telomere in our sample.”

Where do you get the most anti-aging bang for your capsule? Compared to telomeres in women who didn't take vitamins, the chromosome caps were about three percent longer in recruits who had been taking vitamins billed as once-a-day formulations for at least 5 years. Telomeres were eight percent longer in women who had been downing antioxidant-rich multivitamins long term.

Unhelpful: supplements billed as having anti-stress or B-complex formulations did nothing for preventing age-related telomere shortening.

And watch the iron. Women taking this mineral as a stand-alone supplement tended to have nine percent shorter telomeres than women who don't take supplements. That's not particularly surprising since iron helps drive a number of pro-oxidant reactions in the body, ones linked with cellular stress and damage.

The iron finding was also one that Abraham Aviv of the [University of Medicine and Dentistry of New Jersey, New Jersey Medical School](#) noted.

In an editorial accompanying Chen's paper, Aviv argued that if the “buried” data pointing to an apparent adverse effect of iron on telomere length is “true and confirmed in [populations] that are more representative of the general population, this might turn out to be the most important observation in the work.”

Dietary sources of vitamin C and E also seemed beneficial until compared to supplements. Again, not too surprising, since supplements tend to deliver a bigger bounty of these than do the produce-poor diets on which most of us rely. Indeed, Chen's group says, the new data suggest that “oxidative stress and chronic inflammation may be among the major mechanisms of telomere attrition.”

Well, I was pleased to find I'm covered. I've been taking an antioxidant-rich multi every day for years, supplemented with additional capsules of E and D — with no extra iron. Indeed, I suspect, my supplements may be the best things I do diet-wise (if you discount regular consumption of the heavenly heart-healthy [dark chocolate](#) for which I have a penchant).

Found in: Biomedicine, Food Science, Nutrition and Science & Society