



MULTIVITAMINS MAY HELP YOU LIVE LONGER

By Dr. Bo M. Nielsen

You will never want to forget to take your multivitamins: a study says they may help you live longer!

Shortening of DNA ends linked to rate of aging

So how can multivitamins help you live longer? Well, in order to answer this question we need to get into a little bit of genetics. Vitamins don't only protect you against deficiency-related diseases, but also prevent the ends of DNA from shortening, according to a study by the U.S. National Institute of Environmental Health Sciences (Aging & Neuroepidemiology Group).

DNA strands make up chromosomes at the end of which are telomeres, areas of repeat DNA sequences that serve the purpose of protecting the chromosomes from damage. In essence, telomeres prevent chromosomes and their DNA from duplicating all the way to their ends during cell division, which would otherwise lead to the loss of the ends of chromosomes and the information contained in it. As biologist and researchers of telomeres, Elizabeth Blackburn explains, a telomere is like the plastic tip on the end of shoelaces that prevents the laces from unraveling at the ends.

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Why is this important? Throughout our lives, our cells are continuously dividing and new ones are created. In order to keep the same genetic information - this never changes throughout our lifetime - our chromosomes along with their DNA get duplicated in each cell. Now, with every cell division, telomeres get progressively shorter, which researchers believe determines aging. Inevitably, our telomeres will shorten with age, but it is the rate at which they shorten that seems to be linked to how fast we age. In other words, the slower the shortening of telomeres, the slower we age.

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THE SCIENTIFIC STUDY

Background information

586 women aged 35 to 74 were assessed on multivitamin use and dietary nutrient intake. The relative telomere length of white blood cell (leukocyte) DNA was measured by quantitative polymerase chain reaction.

Results

Multivitamin use was associated with longer telomeres. Telomere length was an average of 5.1% longer in daily multivitamin users compared to those who didn't take the supplements. Also, higher intakes of vitamins C and E were linked to longer telomere length.

Multivitamins help to slow down telomere shortening

So now for the really good news: a study conducted this year shows that taking multivitamins daily may help you live longer by slowing down the rate of telomere shortening.

Laboratory studies show that telomeres are very vulnerable to oxidative stress caused by free radicals and this makes

shortening much faster. This would explain why people with higher levels of oxidative stress are more prone to developing chronic diseases and generally have shorter life spans. Researchers believe that vitamins, especially the ones with antioxidant properties like vitamin C and E, can slow down telomere shortening by counteracting oxidative stress and chronic inflammation.

You really should have listened to your mother when she insisted on you taking your multivitamins! But not all multivitamins are the same. These are some of the things to look out for in a multivitamin supplement:

- The purity of ingredients, concentration of active substances, dose and the bioavailability (how much is actually absorbed by your body) are decisive factors for the effect of multivitamin supplements. Also, make sure the micronutrients are in natural, bioavailable forms rather than synthetic forms.
- A multivitamin supplement should contain only vitamins and not include minerals - vitamins should be taken in the morning and minerals in the evening. This is because some vitamins can reduce the absorption of some minerals by the body and vice versa.
- It is important that you take multivitamins every day for them to work effectively.

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VITAMIN C, ALL-AROUND HEALTHY NUTRIENT

By Birgitte M. Nielsen, Nutrition Advisor

Why is vitamin C important?

Vitamin C, otherwise known as ascorbic acid, is a water-soluble vitamin that plays a vital role in hundreds of biochemical reactions that take place in our body. It is essential for the formation of collagen, which maintains the structure of our blood vessels, tendons, ligaments and bones. Vitamin C also facilitates iron absorption and the conversion of cholesterol to bile acids. This versatile vitamin is also an extremely potent antioxidant that protects cells from the damaging effects of free radicals caused by pollutants and toxins.

How much vitamin C do you need?

Humans are one of the very few animal species that are not able to produce vitamin C themselves and must obtain it from dietary and/or supplement sources. Clearly, we may not be getting enough vitamin C from food because 90% of us are not consuming the levels required to prevent and treat many chronic health conditions.

The UK Recommended Daily Allowance (RDA) of vitamin C for adults is 40 mg. Is this enough?

According to the father of orthomolecular medicine, Linus Pauling and many others, this amount is enough to prevent deficiency-related diseases such as scurvy, but is **not enough to prevent lifestyle-related chronic disease**.

So how much is enough? Numerous evidence-based studies say that at least 1,000 mg a day is sufficient to get the health benefits of vitamin C without any side effects. It is worth mentioning that even at doses of 10,000 mg per day, no side effects have been reported.

VITAMIN C HEALTH BENEFITS

So, what can vitamin C do for you? Here are just some of the documented effects:

HEART DISEASE: Vitamin C helps to keep your heart strong and healthy. One study finds that just 300 mg of vitamin C per day reduces the risk of death from heart disease by 42% in men and 25% in women.

HIGH BLOOD PRESSURE: A study published last year found that people with low blood levels of vitamin C had higher blood pressures compared to those who had high levels of vitamin C. Specifically, people with the highest blood levels of vitamin C had 4.66 mm Hg lower systolic blood pressure and 6.04 mm Hg lower diastolic blood pressure compared to people with low blood levels of vitamin C. High vitamin C intake lowers blood pressure.

CHOLESTEROL: A recent meta-analysis revealed that supplementation with at least 500 mg of vitamin

C per day resulted in a significant decrease in LDL (bad) cholesterol and triglycerides.

STROKE: A study conducted in Japan found that people with high blood levels of vitamin C had a 29% lowered risk of stroke.

DIABETES: A study published in the Archives of Internal Medicine showed that supplementation with high levels of vitamin C can decrease the risk of type 2 diabetes by up to 62%.

CANCER: Several studies have shown the correlation between high intakes of vitamin C and reduced risk of certain cancers like colorectal, stomach, lung and breast cancer. One study suggests high intake of vitamin C may reduce risk of breast cancer in postmenopausal women by 24%.

GOUT: The risk of gout - the build up of uric acid in the blood - can be decreased significantly with vitamin C. A study conducted this year found that 500 to 999 mg of vitamin C per day results in a 17% reduced risk of gout; 1,000 mg to 1,499 mg per day results in a 34% reduced risk; and intake of over 1,500 of vitamin C per day translates into a 45% reduced risk of gout.

LEAD TOXICITY: Vitamin C's potent antioxidant properties could be the reason behind its ability to decrease levels of lead in the blood. Lead can accumulate in our blood due to, among other things, pollution and smoking. One study showed that daily supplementation with 1,000 mg of vitamin C leads to an 81% decrease in blood lead levels.

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FATTY FOODS INCREASE HUNGER

You are really hungry; something greasy and filling like a hamburger and fries will surely satiate your hunger right? According to research, quite the contrary: fatty foods activate your hunger hormone

Hunger hormone activated by fatty food

A study reveals that ghrelin, a hunger hormone, is activated by dietary fat and not by fats produced in our body during fasting as was previously believed. In essence, ghrelin tells your brain that you are hungry so that you can increase your food intake.

In order to be activated, ghrelin needs fatty acids, which attach to ghrelin with the help of an enzyme called ghrelin O-acyl transferase (GOAT). For many years scientists presumed that these fatty acids were made in the body during an empty stomach. It is now known that the fatty acids required for ghrelin activation come from the fats we eat. Studies show that when fat from food is ingested, ghrelin levels increase.

When you eat a lot of fatty food, the increase in ghrelin levels causes weight gain because the fat is being stored rather than being efficiently utilised. A vici-

ous cycle emerges; the more fatty food you eat, the hungrier you feel and the more fat your body stores, which in some people can ultimately lead to obesity and associated health risks.

This new discovery is very exciting and promising for future weight loss and weight management plans. In the meantime, we could all benefit from cutting down on the fat we eat, particularly of saturated fats, which are linked to cholesterol and heart disease.

References: Tschöp, M. & all. "Ghrelin induces adiposity in rodents." Nature. September, 2000.



SHRIMP: FRIEND OR FOE?

By Hala Sati, Editor

You've likely heard that shrimp have a lot of cholesterol; is this really true and should you avoid eating them? Let's find out!

Shrimp and cholesterol

So, is it true that shrimp are high in cholesterol? Yes, shrimp do contain cholesterol but not the kind that has a negative impact on your health. In a study published in the American Journal of Clinical Nutrition, participants who ate 300 grams of shrimp a day did see a 7% increase in LDL (unhealthy) cholesterol levels **BUT** their HDL (healthy) cholesterol levels also increased by 12%. An important factor in maintaining healthy cholesterol levels is the ratio of total cholesterol to HDL cholesterol and the ratio of LDL to HDL cholesterol. The study showed that even by eating shrimp every day, these ratios were kept low. Moreover, participant's triglyceride levels decreased by 13%.

Here are just a few more reasons why you *should* keep shrimp on your menu:

Heart benefits:

Shrimp contain high levels of vitamin B12, which keeps homocysteine levels low. High levels of homocysteine are

linked to an increased risk of damage to blood vessel walls and atherosclerosis (hardening of the arteries). Shrimp also contain omega-3 fatty acids which protect the heart through their anti-inflammatory effects and ability to prevent blood clots. Furthermore, omega-3 protects against arrhythmias (heart beat disorders), which could result in heart attacks and sudden death. In a 2007 study, consumption of 300 grams or more of fish resulted in a 29.2% reduction in QT interval scores - a measure of the heart's electrical cycle. A lower QT interval score is associated with a lower resting heart rate, which translates into more protection against arrhythmias and sudden death.

High blood pressure reduction:

A study published in the Hypertension Journal found that people who regularly consumed omega-3 had lower blood pressure compared to those who did not regularly consume omega-3.

Cancer protection:

Selenium is being linked more and more to cancer protection. One study showed that selenium can lower the risk of non-melanoma skin cancer by 60%.

Protection against mental decline:

Many studies have found a link between omega-3 intake and protection against mental decline, dementia and Alzheimer's. The Framingham Heart Study published in the Archives of Neurology discovered that docosahexaenoic acid (DHA), an omega-3 fatty acid, lowers the risk of developing all-cause dementia by 47%.

Mood improvement:

Shrimp contain tryptophan, an amino acid that the body converts into serotonin, which is known to improve mood and promote happiness and relaxation.

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Shrimp are low in total and saturated fat and calories yet high in nutritious substances.

They are good sources of:

Protein • Vitamin D • Selenium • Tryptophan • Vitamin B12 • Iron • Phosphorus • Zinc Copper • Omega-3 fatty acids • Magnesium

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