

Nutty for Brazil Nuts? You should be!

Popular snack contains an ingredient shown to help prevent cancer.

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Selenium is the healthy secret in Brazil Nuts.

How good is it when you discover that something that is tasty to eat also helps prevent cancer? The Brazil nut (*bertholletia excelsa*) is just such a food.

The secret to this seed of the South American tree in the family [Lecythidaceae](#) is that it contains something called selenium.

Robert Gadimian of Rophe Pharma explains that until a few decades ago, selenium was not even recognized as having any role in human nutrition. Now, however, Gadimian explains we know that selenium is an essential "trace" element involved in many different functions of the human body.

Selenium is so beneficial it has been shown to help prevent cancer. Selenium may also protect the body against contaminants such as mercury, cadmium, and silver while at the same time help speed the elimination of cancer cells as well as slow tumor growth.

Selenium can also be found in foods such as tuna or sardines or turkey or grass-fed beef but the best source, according to Gadimian is... yes, the Brazil nut.

Why is Selenium important to human health?

Selenium is of fundamental importance because it is an essential component of several major metabolic pathways, including thyroid hormone metabolism, antioxidant defense systems and immune function. Low selenium status has been associated with increased risk of mortality, poor immune function, and cognitive decline. Higher selenium status or selenium supplementation has antiviral effects, is essential for successful male and female reproduction, and reduces the risk of autoimmune thyroid disease.

Selenium acts as a co-factor for several key antioxidant enzymes called selenoproteins that recycle cellular antioxidants (such as glutathione.⁴) This process reduces oxidative stress -- a cause of premature aging and chronic disease.^{1,2,5,6}

Deficiencies of selenium have been associated with an increased cancer risk. Several clinical and animal trials have suggested that improved selenium nutrition may reduce the incidence of different kinds of cancer, including lung, colorectal, and breast. Multiple studies reveal that low selenium levels in the blood, hair, or nail clippings are associated with a two to threefold increase in overall cancer risk.^{11,12} For specific tumors such as thyroid cancer, the risk rises to nearly 8-fold.¹³ Selenium insufficiencies are now known to increase risk of cancers of the bladder, lung, stomach, esophagus, and liver.^{5,14} Results from recent trials also show an anticarcinogenic effect of selenium in the prostate.

How Selenium helps fight cancer.

Selenium acts a bit like a mechanic in how it works. It binds protective antioxidants like glutathione to areas of DNA that need repair. This process reduces the damage to cellular DNA and is especially important to reduce cancer growth, improve the aging process, and prevent against many degenerative diseases.

Evidence suggests there might be other modes of action of selenium affecting cancer risk. It functions as an essential nutrient that provides the catalytic centers of a number of selenoenzymes, including some with antioxidant and redox functions and by serving as a source of selenium metabolites that affect carcinogenesis in other

What Do Large Clinical Studies Show? A decrease in cancer risk.

Several large-scale epidemiologic studies have different results; some show a relationship between selenium and reducing cancer risk but some show no benefits. The reason for differences in these large studies is that it is difficult to control what people eat and also how the studies are designed to 'show' results. One of the latest and biggest meta-analysis studies performed looked at 69 large clinical studies and concluded statistically that selenium does decrease the risk for cancer.¹³

Another interesting study done in one region of China, where epidemic rates of esophageal and gastric cancers occurred, showed the risk was cut in *half* after large doses of selenium were given.¹⁴

So, the clinical data points to the fact that selenium does decrease the risk of cancer and selenium deficiency is correlated with increased risk of cancer.

The Catch? Don't overdo it.

Too much selenium is not good for you. In a couple of long term clinical studies, it has shown to increase the risk for diabetes. It does not cause diabetes, it just increases your risk. For people with high BMI, selenium had no impact on increasing the risk for diabetes.

Recommended dose.

Daily recommended amount for selenium is 55 mcg/day. The average daily intake in the U.S is 125 mcg. But depending on where in US you live, this amount could differ significantly due to the food you eat. Below is a list of food that are high in selenium. For cancer prevention purpose, 150-200 mcg/day is recommended (which amounts to 2-4 Brazilian nuts per day).

Brazil nuts: 1 oz. (6-8 nuts): 544 mcg (over 100% DV)

Yellowfin tuna: 3 oz. 92 mcg (over 100% DV)

Halibut, cooked: 3 oz. 47mcg (67% DV)

Sardines, canned: 3 oz. 45mcg (64% DV)

Beef, grass-fed: 3 oz. 33 mcg (47% DV)

Turkey, boneless: 3 oz. 31 mcg (44% DV)

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1. Regulation of lipoygenases, enzymes that produce inflammatory molecules that promote cancer growth;
 2. Direct reduction of oxidative stress that causes free radical damage;
 3. Protection of the antioxidant-recycling seleno- proteins;
 4. Detoxification of cancer-inducing metals;
 5. Induction of protective "phase II" liver enzymes that neutralize organic carcinogenic toxins;
 6. Inhibition of DNA alterations, precursors to initiation of cancerous changes;
 7. Inactivation of molecular transcription factors required by cancer cells to support their growth and development;
 8. Shutting down of the essential cell replication cycle needed by cancer cells to produce their explosive growth;
 9. Induction of apoptosis, the programmed cell death, a natural feature of all normal body cells that is missing in cancerous cells, allowing them to continue to reproduce indefinitely;
 10. Enhanced immune system activity to detect and destroy incipient cancer cells;
 11. Downregulation of sex hormone receptors used by certain cancers to sustain their growth;25
 12. Limiting effects on tumor invasion and metastasis.
 13. 13 Selenium Exposure and Cancer Risk: an Updated Meta-analysis and Meta-regression. *Sci Rep.* 2016 Jan 20;6:19213. doi: 10.1038/srep19213.
 14. Mark SD, Qiao Y, Sanford DM, et al. Prospective study of serum selenium levels and incident esophageal and gastric cancers. *J Natl Cancer Inst.* 2000;92:1753-1763.