

Selenium; the natural way to improve Health & Longevity

What is Selenium?

"It is hard to overestimate the importance of selenium to biological systems. Its crucial role is underlined by the fact that it is the only trace element to be specified in the genetic code."

Dr Margaret Rayman, School of Biomedical & Life Sciences, University of Surrey, Guildford, UK

- Selenium is an essential micro-nutrient trace element found in the soil.
- There are long-established Recommended Daily Intake levels (RDIs), set to avoid overt Selenium deficiency diseases such as Keshan & Kashin-Beck. Consistently low Selenium levels are linked to infertility, impaired brain function, reduction in immune system response, and degenerative disease.
- Selenium is becoming less available in soils around the world.

How is Cellular health related to improving longevity?

"There is no more extensive body of evidence for the cancer preventative potential of a normal dietary component than there is for Selenium"

Professor Gerald Combs, Division of Nutritional Sciences, Cornell University, USA

- All our body's systems and organs rely on the health and vitality of our cells. Health, energy, vitality and longevity are dependent on the correct functioning and robust health of our cells.
- The body's 60 trillion cells work to keep us alive & healthy. They are under constant stress and attack from everyday contact with toxins, pollutants and cell aging imperfections,
- When our body's cells fail to maintain themselves and reproduce properly, we not only fail to thrive, we begin to suffer a wide range of degenerative and other disease.
- When our cells fail to die as intended (apoptosis), cancer can develop.
- Damage can be repaired and the aging process inhibited when our cells are fully supported nutritionally.
- Longevity improvements begin when our cellular health is optimised, however the benefits only occur when we receive an optimal level of Selenium in the most appropriate forms.

What is Bio-Fortification?

- The provision of additional nutrients in biologically natural forms.
- Bio-fortification of Selenium may be achieved by making additional Selenium available to plants, typically via the soil. The organisms in the soil and then the plants naturally absorb the Selenium and fully convert it to natural organic forms, biologically incorporating them in to their plant tissues.

What is the optimum dietary intake for Selenium?

"It is clear that the food systems of most populations do not currently provide enough selenium to support the maximal expression of selenoenzymes. It can thus be assumed that many individuals have compromised protection from oxidative stress, which increases their risks to various chronic diseases, and those of the heart and lungs, as well as cancer."

"The vast majority of people appear to be selenium undernourished to subclinical degrees. In consequence, they may experience the potentiation of viral diseases (eg measles, hepatitis, influenza and HIV-AIDS); and enhanced susceptibility to oxidative stresses associated with infection, inflammation and exposure to environmental pollutants. At the same time, supranutritional intakes of selenium have emerged as a prospective means of reducing cancer risk. For several reasons, therefore, it is in the public health interest of many countries to develop effective and sustainable ways of increasing selenium intakes"

Prof. Gerald Combs, Division of Nutritional Sciences, Cornell University, USA

- For Australian adults, the RDI of Selenium is about 80 micrograms (80µg) per day. This level was set to avoid the onset of overt deficiency disease.
- The focus of nutrition has moved from the avoidance of deficiency disease to avoidance of degenerative disease.
- As maintenance of cellular health is now seen as necessary, consumption of levels higher than the RDI are seen as desirable.

'Information from both animal and human research indicates that 100-200 micrograms of additional Se/day is necessary for greatest reduction of cancer.'

Prof. Philip Whanger, Dept of Environmental & Molecular Toxicology, Oregon State University, Corvallis, Oregon USA.

- Increasing the Selenium level appears to keep improving cellular functionality until an optimal level is reached. Individual requirements may vary but there is a definite difference in the amount required by men and women.
- The optimum Selenium intake is about 230µg per day for men and 130µg for women.
- Each portion of Bio-Fort™ food supplies a measured amount of Selenium, so a daily target can be set and maintained.

Why is Bio-fortified Organic Selenium preferable to other forms of Selenium?

- A Selenium 'form' is a chemical compound that includes Selenium.
- An example of an inorganic form of Selenium is Sodium Selenite, and an example of a replicated organic form of Selenium is Selenomethionine. Both can be provided as Supplements.
- "Supplementation" is a term to describe the isolation and supply of specific nutrients as separate from, and in addition to, normal food. Bio-fortification is NOT Supplementation.
- Supplemental Selenium has been confirmed as being poorly retained by the human body, and can be more readily over-consumed in the mistaken belief that more than 'optimal' is somehow better!
- The biologically incorporated forms organic Selenium are more bioavailable than inorganic forms, are retained longer in the body, and are likely to be superior to inorganic forms for reducing the risk of a range of degenerative diseases.
- The many and varied forms of Selenium provided in food as a result of bio-fortification are decided by Mother Nature, and are more beneficial than the single forms of Selenium as typically supplied in Supplements. Grain contains circa 40 known biologically incorporated organic forms of Selenium.
- Not all forms of Selenium are recommended as safe for consumption. Selenium is potentially dangerous if consumed to excess, whatever the form. However Bio-fortified Selenium consumed as an biologically incorporated part of a natural food is unlikely to be consumed to excess.
- Bio-fortified products come from nature, and as normal foods they take time to prepare and consume, becoming part of the household routine. This allows consumption levels to be easily established, regulated, and monitored as part of a normal diet.

Is there a health risk of too much Selenium?

- The Bio-Fort process is used to counter cropping soils that are increasingly deficient in Selenium. There is minimal risk if Selenium is consumed as a biologically-fortified *Bio-Fort™* food.
- Selenium can be fatal if amounts of highly concentrated and inappropriate forms of Selenium are consumed, such as the Selenious acid used in Gun Blue. Many common household products would fall into the same category in the same circumstances.
- Care must be taken with the consumption of supplemental inorganic Selenium. The FDA of the USA, referring to Supplemental intake of inorganic Selenium, advises that while no adverse affects have been reported below intake levels of 800µg per day, supplementary intake in excess of 400µg per day for adults, and 280µg per day for 9-13 year olds, may be detrimental and should be avoided.
- In parts of the world that have naturally occurring very high levels of Selenium, populations have been ingesting levels of biologically incorporated organic Selenium as part of their normal diet at multiples of current recommended maximum levels for generations with no reported ill effects.
- Selenium is very high in some seafood consequent to Glaciation. It is reported that Inuit (Eskimo) men in Greenland commonly have plasma Selenium levels well above the average Australian level, and that Inuit men have the lowest rate of prostate cancer in the world.
- It is acceptable for children to consume Bio-Fort™ Selenium foods as part of their normal diet.

How can you ensure optimal Selenium levels all the time?

- Selenium bio-fortified grains are grown, harvested, stored, blended, milled, mixed, and baked in to a variety of Bio-Fort™ food products, all controlled by Australian owned and operated companies.
- All Bio-Fort™ Selenium foods provide a measured amount of Selenium.
- Consumers can estimate their current level of Selenium consumption and then decide to consume an additional amount of Selenium by slice or portion so as to reach the optimal amount.
- The quality and duration of effect of Bio-Fort™ Selenium is superior to Selenium supplements, so even if Bio-Fort™ Selenium is taken irregularly, a more stable level of cellular Selenium may be maintained.

What are some issues and controversies surrounding Selenium?

- In the very recent past, Selenium was considered toxic. It still is, depending on form.
- Selenium is attracting worldwide scientific research attention as the evidence accumulates pointing towards its essential role in positive cellular health outcomes.
- Selenium is a very high profile area of study across a wide spread of apparently quite different diseases, and while the mechanisms of its actions appear to differ with each disease, a commonality is that Selenium "works" at the cellular level. Selenium is effective in reducing the risk of and controlling certain cancers, with outstanding results for smokers.
- The main controversy surrounding Selenium seems to be that current food labelling restrictions are not keeping up with scientific developments, and established benefits cannot be represented.
- The jury is not out on whether Selenium is beneficial or not, because that decision has already been made in the affirmative. The issue now is just "how good" is it? Information continues to point to "exceptionally good" for improved and sustained benefits associated with cellular health.