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Selenium & CoQ10

for a stronger

IMMUNE SYSTEM

Natalie Schmidt and Dr. Edmund Schmidt examine the role this neglected trace element plays in strengthening the immune system...

THE importance of selenium was only discovered in 1957 – before then, this trace element was actually considered harmful. However, the exact opposite is true: there are 21 selenoproteins based on this element which are essential for the human body. Selenoproteins are protein compounds with selenium in their active site. They counteract the oxidative stress that damages our cells. Our body's cells are not only at risk from infections, but also from free radicals: reactive compounds, often containing oxygen, that can massively disrupt cell functions and cause cell death. Our immune system is significantly affected, since the complex immune cells are highly susceptible to radical degradation.

Glutathione peroxidases are very effective at capturing free radicals, but

they need selenium to function – four atoms in the active site of each enzyme. Selenium is therefore vital for our body's cellular defence against free radicals and to build a strong immune system.

Currently, the main focus is on the effect of selenium on SARS-CoV-2. For the virus to 'latch onto' a human cell, the spike proteins on the virus surface have to attach to the respective cell. Selenium reacts with sulphhydryl groups in the virus centre and inactivates them. This causes the virus surface spikes to lose their ability to attach to the cells of the human body. Similar effects have previously been reported for Ebola infections (1). Within our own patient group, we see significantly milder progressions of COVID-19 in those who regularly supplemented selenium.

In addition to its antioxidative function, selenium helps build a strong immune

system in numerous other ways. For instance, it increases the production rate of natural killer cells. As the name implies, these defence cells on the frontline of our immune system eliminate intruders such as viruses and bacteria. Selenium, along with vitamins D and E and some plant substances, also improves the performance of T lymphocytes, another type of immediate defence cells against infectants in our body. Moreover, selenium prevents the formation of high-molecule polymer parafibrin. This substance causes microclots and embolisms, especially in COVID-19 patients. These complications can often be seen in the disease's final stage and can cause death(2).

Since the development of cancers is strongly related to the immune system, it is only logical that selenium plays an important role in cancer prevention. The



link between good selenium levels and lower risks of cancer has been proven time and again. A good example is the work of Jiang et al. which shows the effect in breast cancer(3).

Selenium also converts harmful protein sulfhydryl groups attacking the immune system into inactive disulphide compounds(4). Adding up these direct impacts with the effects of selenium within glutathione peroxidases and other selenoproteins shows how multi-faceted the effects of selenium in our organism are. Unfortunately, most of the population does not receive enough selenium for all vital functions from food alone.

In Austria and Germany, the daily average intake of selenium is only 30 µg, England averages 40–50 µg per day. The ideal amount, however, lies between 100 and 200 µg selenium daily. Supplements are therefore advisable to reach a sufficient regular selenium intake. Organic supplements such as SelenoPrecise by Pharma Nord, are usually resorbed better and can be stored in the body. They are the first choice for prevention and daily use. Inorganic compounds, such as selenite and selenate, are ingested faster, but not resorbed well. Inorganic selenium is suitable for intravenous application if a fast effect is needed in circumstances such as the treatment of infections or tumours.

CoQ10

CoQ10, or ubiquinone, is a vitaminoid, i.e. a vitamin-like substance. Up until about age 35, the human body produces CoQ10 in sufficient quantities. Afterwards, or in case of illness even before, the production of CoQ10 continually decreases. CoQ10 is an important factor in our body's energy production. Energy is generated within the mitochondria, which form part of each of the 80 trillion cells of our body. The more energy an organ needs, the

more mitochondria are in its cells. Within the mitochondria, energy is produced via mitochondria electron transport chains. CoQ10 is one of the molecules transferring electrons.

The highly active mitochondria are extremely susceptible to oxidative stress and infections. Oxidative stress, for instance as part of an infection, can massively interrupt the cells' energy supply. Immune cells may lose all function. CoQ10 is therefore crucial to a working immune system, as it optimises energy yield, protects mitochondria in all cells from oxidative stress and supports vitamin E in capturing radicals at the mitochondrial cell walls. People above the age of 35, as well as younger people with chronic illnesses, should take in 100 to 200 mg CoQ10 per day. Patients with cardiovascular or autoimmune diseases should take in 300 mg daily. Actual daily intake via food is only around 5 mg. Supplements are therefore highly advisable. A Spanish study showed that oxidised CoQ10, found in supplements like Q10 Bio-Qinon Gold 100 mg by Pharma Nord, is best resorbed by the human organism. It should be noted that CoQ10 is resorbed through our lymphatic system, which takes about 6 to 8 hours. Advertisements promising instant effects are therefore false.

CoQ10 affects the activity of vitamin K antagonist-type anticoagulants. Patients in treatment with such medications (e.g. Phenprocoumon, Marcumar) should have their coagulation checked more often when starting to take CoQ10.

Many medications, especially statin-type cholesterol-lowering drugs, disrupt or block the body's production of CoQ10. The immune system suffers greatly from this, since its cells depend on a sufficient energy supply. Especially the elderly, whose ubiquinone production is already decreased, are often prescribed


many different medications. The resulting significant energy deficit explains older people's susceptibility to illnesses and infections. A large-scale scientific study with 400 healthy Swedish people aged 70+ (Kisel10 study) showed that supplementing selenium and CoQ10 alone can cut mortality rates over a four year and a ten year time span in half. ■

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