Selenium for Vascular Health

Selenium supplements may reduce the risk of heart disease by inhibiting the oxidation of LDL ('bad') cholesterol, suggests a small study from Italy.

Writing in the journal Nutrition, Metabolism and Cardiovascular Diseases the Italian researchers report that 14 healthy subjects taking a daily selenium supplement did not experience significant increases in oxidatively modified LDL, compared to a two per cent increase observed prior to supplementation.

Such results could favourably reduce the risk of heart disease as oxidative modification of LDL has been reported to be a major part of the pathogenesis of atherosclerosis, and subsequently cardiovascular disease (CVD).

"According to the most widely accepted theory of atherogenesis, oxidatively modified LDL activates a series of cellular events in the arterial wall ultimately leading to plaque formation," explained lead researcher Fausta Natella from the Free Radical Research Group at the National Research Institute for Food and Nutrition.

"The principal result of our study is that a 10-day supplementation with selenium is able to prevent the postprandial increase in both LDL minus and susceptibility to oxidative modification of LDL in a group of subjects adequately supplied with selenium, without modifying plasma selenium concentration," said Natella.

Natella and collaborators from the University of Udine and the University of Padova assigned the 14 volunteers (age range 25-40, eight men) and assigned them to receive 110 micrograms of selenium per day as selenium yeast. Blood samples were taken before and after eating an experimental meal both at the start of the intervention, and after ten days of supplementation.

The European recommended daily intake (RDI) is 65 micrograms.

The researchers' report that compared to pre-supplementation, ten days of selenium supplementation was associated with inhibition of after-meal increases in oxidatively modified LDL (no significant increase).

Moreover, levels of malondialdehyde (MDA), a reactive carbonyl compound and a major end product of lipid oxidation, also did not increase significantly post-prandially after selenium supplementation, while prior to supplementation MDA plasma levels increased by about 10 per cent.

"Our results, obtained on subjects adequately supplied with selenium, suggest that a non-limiting selenium availability counteracts the postprandial formation of the atherogenic form of LDL and provide a rationale for the epidemiological evidence of the inverse correlation between selenium intake and the incidence of chronic and degenerative diseases," said Natella.

The study does have an obvious limitation in that no placebo group was used for comparison, and further studies are required to confirm the benefits of improved selenium status for a reduced risk of cardiovascular disease.

European selenium levels have been falling since the EU imposed levies on wheat imports from the US, where soil selenium levels are high. As a result, average intake of selenium in the UK has fallen from 60 to 34 micrograms per day, leading to calls from some to enrich soil and fertilizers with selenium to boost public consumption.

This study published in the journal Nutrition, Metabolism and Cardiovascular Diseases shows that daily selenium supplementation can reduce the risk of development of heart disease because selenium prevents the oxidation of LDL.

Oxidatively modified LDL activates a series of cellular events in the arterial wall ultimately leading, to plaque that lead to blockages in the arteries and development of heart disease. Dr.Rath has shown in his

research and clinical studies that the root cause of atherosclerosis or plaques is a weak arterial wall structure due to chronic deficiency of cellular nutrients like Vitamin C, lysine and proline.

We have shown in clinical study that the synergistic combinations of these nutrients can not only lower cholesterol, LDL, and triglycerides, but they can also lower the lipoprotein (a) levels, which more and more research is emphasizing as a great risk factor for development of cardiovascular events like heart attacks and strokes.