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## What is Oxidative Stress?

Cellular reactions produce waste products called free radicals. Free radicals can cause damage to our cells if they are not neutralised by antioxidants. Oxidative stress is the state our body is put in when the levels of antioxidants in our body are not high enough to counteract the damaging effect of free radicals. Oxidative stress has been linked to over 200 different disease states. Taking an antioxidant supplement such as MitoQ boosts our own supply of antioxidants and reduces free radical damage, reducing oxidative stress.

Free radicals are a by-product of almost every biochemical reaction. Normally, our body keeps these electron-stealing atoms under control with endogenously produced antioxidants such as coenzyme Q10 (Co Q10); however aging, mitochondrial damage, and exposure to environment toxins all serve to reduce our own supply of antioxidants and increase free radical production. Free radicals that are left unchecked inflict severe damage on whatever cellular component they come into contact with, be it fat cells, protein, DNA or RNA. This causes severe damage to the cell and ultimately cell death and puts our body in a state known as oxidative stress.

Oxidative stress is known to be a precursor to over 200 different disease states.

In addition, oxidative stress is thought to contribute to aging, male infertility and to affect skin appearance and skin scarring. Research has shown that the onset of these conditions appears related to periods of oxidative stress.

Lipids are particularly susceptible to attack from free radicals and oxidative stress that involves lipids is called lipid peroxidation. As well as being a major source of energy storage, lipids are also crucial in the production of hormones, vitamins and cell membranes. When lipid peroxidation occurs, free radicals steal electrons off lipids within the cell membrane which increases the permeability of the membrane allowing foreign substances to enter the cell and the contents of the cell to leak out. This changes the make-up of the cell which disrupts a number of vital biochemical processes within the cell and eventually leads to cell death. Peroxidation is believed to be involved in cellular aging and in various diseases.

Amino acids are the building blocks of proteins. Protein oxidation during oxidative stress breaks vital bonds that hold amino acids together and disrupts many biochemical processes and the formation of DNA and RNA. Protein oxidation has been linked to atherosclerosis, diabetes, Parkinson's disease, and many other disease states.

We can limit the amount of oxidative stress placed on our body by eating and living healthily and doing at least 30 minutes of physical activity every day. We can also take antioxidants to supplement our diet, such as Co Q10. MitoQ is a revolutionary formulation of Co Q10 that is taken up directly by the mitochondria of the cell, replenishing levels of Co Q10 right at the site of many biochemical reactions, reducing oxidative stress.

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