



## Free Radicals - the Low Down

Free radicals are produced as a by-product of many cellular reactions. They are kept in check by our body's natural supply of antioxidants such as coenzyme Q10. However, if overproduction of free radicals occurs, or our antioxidant supply is suboptimal, they can inflict severe damage on the cell. Taking antioxidant supplements such as MitoQ, a revolutionary targeted form of Co Q10, boosts our own supply of antioxidants and reduces free radical damage.

Free radicals are the name given to atoms that have an unpaired electron in their outer shell. As you may recall from high school chemistry, atoms bond to other atoms through the sharing of electrons to make a molecule. Molecules join together to make up a cell. Our body is composed of over ten trillion cells.

A free radical is basically an atom that intended to share its electrons with another atom but for some reason did not complete the biochemical reaction, so is left in an unstable state. Free radicals intensely dislike being unstable so move quickly to steal their missing electron from the closest stable molecule in their vicinity. This may be a lipid or protein molecule, or a strand of DNA or RNA.

Unfortunately, this attacked molecule then becomes a free radical itself and a chain reaction of electron-stealing ensues.

Biochemical reactions happen in almost every cell in our body, every second of the day, which means free radicals are constantly being formed. Many of these reactions happen within the mitochondria of the cell, and as a result these delicate organelles are highly susceptible to free radical damage. Normally, the body counteracts free radical production with its own supply of antioxidants, and the cascade of electron-stealing can be controlled before it causes major disruption to the cell. But our antioxidant production diminishes with age and is negatively affected by a poor diet. Damage to our mitochondria also reduces production of endogenous antioxidants such as coenzyme Q10 (Co Q10).

In addition, over-production of free radicals can occur on exposure of our body to pollution, environmental toxins, UV radiation, and with high-fat diets. Free radicals that are left unchecked can lead to a state known as oxidative stress. Oxidative stress has been associated with the development of many health conditions.

But contrary to popular belief, free radicals aren't all bad and have some beneficial effects when present at the right numbers, in the right place. Our immune system uses free radicals to "tag" damaged tissue and foreign invaders such as viruses and bacteria, marking them for removal by the body. Free radicals are also thought to feedback signals to the mitochondria and other cells which help to calibrate and finely-tune cellular activities, such as cellular respiration, making it more efficient.

Which is why it is important to make sure your body is in optimum health and that your levels of free radicals are what they are supposed to be. Dietary supplements such as co Q10 improve our body's supply of antioxidants and keep our free radicals at a controllable level.

MitoQ is a revolutionary formulation of Co Q10 that can be uptaken directly by the mitochondria of the cell, replenishing levels of Co Q10 in the place where it is needed the most.

## **Bibliography**

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