



The Heart and Oxidative Stress

Our heart is made up mostly of muscle cells that help our heart to beat two billion, nine hundred and twenty million times in an average lifetime. Cells that work this hard require a constant supply of blood and oxygen. Any restriction to this supply effects cellular reactions increasing free radical production and decreasing the manufacture of natural antioxidants such as coenzyme Q10 (COQ10). This puts our heart in a state of oxidative stress. MitoQ is a form of COQ10 that targets mitochondria, which are abundant in heart muscle cells and a major site of free radical production. MitoQ is a potent antioxidant that can reduce oxidative stress when taken in conjunction with a healthy diet and exercise.

Over 5 litres of blood gets pumped through our heart every minute. That requires our heart to beat around 100 000 times each day to supply freshly oxygenated blood to every cell in our body. By the time we die at an average age of 80, our heart has beaten two billion, nine hundred and twenty million times. That's not bad for an organ that is about the size of our clenched fist and made almost entirely of muscle.

Our heart is divided into four chambers: two on the left and two on the right which are separated by a wall called the septum. The left side of the heart receives oxygen-rich blood from the lungs and

pumps it to the rest of the body. The right side of the heart receives oxygen-depleted blood from the body and pumps it to the lungs for reoxygenation. Each pump represents a heart-beat and all this pumping is coordinated by a specialised bundle of nerve cells called the sino atrial (SA) node. Although the SA node self-generates its electrical pulse, changes in our body state, such as those due to stress, anxiety, or exercise; medical conditions such as hypo- or hyperthyroidism; and changes to the concentration of salts in our blood, all influence its rate of firing.

Oxygen also regulates our heart beat and is vital for cellular function. Without it, mitochondria are unable to convert the food we eat into energy for the cell called adenosine triphosphate (ATP). Heart cells are abundant in mitochondria and require a constant supply of oxygen and energy. Any disruption to this supply is always detrimental. The trouble is, it is not hard for things to go wrong.

Most disorders of heart function start with damage to the coronary arteries. These small arteries twist and wind across the surface of the heart and supply the cells of the heart with blood. Smoking; infections that inflame the blood vessels; kidney damage that increases blood pressure; and consumption of foods high in trans fats, cholesterol, or sugar all damage the inner lining of these arteries. Damage attracts fats, calcium, cells and cell debris, which build up, narrowing the width of the artery, reducing its capacity to constrict or dilate and restricting blood flow. This process is called atherosclerosis.

Any blood flow restriction starves the cells of oxygen, effecting crucial cellular reactions and increasing free radical production. Free radicals steal electrons off cellular components made of protein, fats or DNA, causing the cell to malfunction and die. If blood supply is

severely restricted or completely obstructed, damage to the heart muscles reaches a critical level and a heart attack occurs. Timely intervention that restores blood flow is crucial if recovery of normal function is to occur. If blood flow is not promptly restored, free radicals are left to cascade out of control compounding the area of heart muscle damage. Normally, free radical damage is counteracted by our bodies own natural supply of antioxidants, such as COQ10. The trouble is, without oxygen, we cannot make antioxidants either. This puts our heart in a state of oxidative stress.

Oxidative stress has long been implicated in the development of a number of disorders of heart function. Reducing oxidative stress by the administration of supplemental antioxidants such as COQ10 may help prevent long term heart damage. MitoQ is a specially formulated form of COQ10 that targets mitochondria, releasing this powerful antioxidant right where it is needed the most.

When taken in conjunction with a healthy diet and exercise, MitoQ can help reduce oxidative stress. So be kind to that hard working organ that keeps on going day after day, year after year, and take some MitoQ today.

Always read the label and use as directed. If symptoms persist see your healthcare professional.

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