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## **CoQ10 may reduce muscle damage during intensive exercise**

By Stephen Daniells, 27-Oct-2011

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**Supplements of co-enzyme Q10 may counter the rise in oxidative stress associated with strenuous exercise and reduce subsequent muscle damage, says a new study with ultra-runners participating in a 50 km run across Europe's highest road in the Sierra Nevada.**

The daily CoQ10 supplements were associated with reductions in levels of markers of oxidative stress and inflammation, as well as a reduction in the excretion of creatinine, a measure of muscle damage, according to a study with 20 ultra-runners published in the *European Journal of Nutrition*.

The study is reported to be the first time that the effects of CoQ10 supplementation have been studied in relation to inflammatory mediators and oxidative stress associated with endurance exercise.

*"The knowledge gained from these findings will provide a foundation for similar CoQ10 supplement therapies in athletes performing strenuous exercise in order to reduce the undesirable effects of the evoked oxidative stress and inflammation signaling during high-intensity exercise and reduce the muscle damage induced,"* wrote researchers from the University of Granada in Spain.

### **CoQ10**

CoQ10 has properties similar to vitamins, but since it is naturally synthesized in the body it is not classed as such. Our ability to synthesize the compound peaks at the age of 20 and amounts in our body decrease rapidly after we pass the age of 40.

With chemical structure 2,3-dimethoxy-5-methyl-6-decaprenyl-1,4-benzoquinone, it is also known as ubiquinone because of its 'ubiquitous' distribution throughout the human body.

The coenzyme is concentrated in the mitochondria - the 'power plants' of the cell - and plays a vital role in the production of chemical energy by participating in the production of adenosine triphosphate (ATP), the body's co-called 'energy currency'.

It has been studied for its role in cognitive health, heart health, and anti-aging (in oral and topical formulations). It has also been shown to benefit those suffering from angina, heart attack and hypertension.

Its use in the US, particularly in supplements, has been boosted by the rise in popularity of statin drugs which deplete the body's natural stores of CoQ10.

### **Ultra-potential**

Twenty ultra-runners participated in the study and were divided into two equal groups. One group received one 30 mg capsule of CoQ10 two days before the test, three 30 mg capsules the day before the test, and one capsule one hour before the test. The other group received placebo at the same time. The test involved a 50 km distance run across Europe's highest road in the Sierra Nevada.

Results showed that the placebo group displayed a 100% increase in levels of 8-OHdG, which *"a sensitive indicator of DNA damage as a result of oxidative stress"*, said the researchers, compared with an increase of 37.5% in the runners taking the CoQ10 supplements.

The data also indicated that CoQ10 countered the over-expression of certain pro-inflammatory compounds after exercise, said the researchers.

Interestingly, a reduction in levels of creatinine in the urine was observed in the CoQ10 group, compared with the placebo group. Creatinine is produced from creatine and high levels are a marker of muscle break down (or kidney

damage).

*"The present findings provide evidence that oral supplementation of CoQ10 during high-intensity exercise is efficient reducing the degree of oxidative stress, which would lead to the maintenance of the cell integrity,"* wrote the Granada-based researchers.

*"CoQ10 supplementation reduces creatinine excretion and therefore decrease muscle damage during physical performance."*

Source: *European Journal of Nutrition*

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*"Coenzyme Q10 supplementation ameliorates inflammatory signaling and oxidative stress associated with strenuous exercise"*

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