

Quercetin Affects Erythropoiesis and Heart Mitochondrial Function in Mice

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Quercetin, a dietary flavonoid used as a food supplement, showed powerful antioxidant effects in different cellular models. However, recent *in vitro* and *in vivo* studies in mammals have suggested a prooxidant effect of quercetin and described an interaction with mitochondria causing an increase in O₂- production, a decrease in ATP levels, and impairment of respiratory chain in liver tissue.

Therefore, because of its dual actions, we studied the effect of quercetin *in vivo* to analyze heart mitochondrial function and erythropoiesis. Mice were injected with 50 mg/kg of quercetin for 15 days. Treatment with quercetin decreased body weight, serum insulin, and ceruloplasmin levels as compared with untreated mice. Along with an impaired antioxidant capacity in plasma, quercetin-treated mice showed a significant delay on erythropoiesis progression. Heart mitochondrial function was also impaired displaying more protein oxidation and less activity for IV, respectively, than no-treated mice. In addition, a significant reduction in the protein expression levels of Mitofusin 2 and Voltage-Dependent Anion Carrier was observed. All these results suggest that quercetin affects erythropoiesis and mitochondrial function and then its potential use as a dietary supplement should be reexamined. © 2015 Lina M. Ruiz et al.