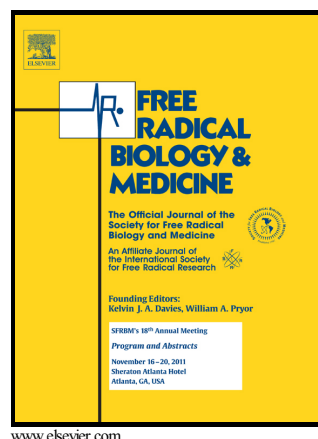


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Ascorbic acid supplementation improves skeletal muscle oxidative stress and insulin sensitivity in people with Type 2 diabetes: findings of a randomized controlled study

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Abstract

Aim/hypothesis: Skeletal muscle insulin resistance and oxidative stress are characteristic metabolic disturbances in people with type 2 diabetes. Studies in insulin resistant rodents show an improvement in skeletal muscle insulin sensitivity and oxidative stress following antioxidant supplementation. We therefore investigated the potential ameliorative effects of antioxidant ascorbic acid (AA) supplementation on skeletal muscle insulin sensitivity and oxidative stress in people with type 2 diabetes.

Methods: Participants with stable glucose control commenced a randomized cross-over study involving four months of AA (2 x 500 mg/day) or placebo supplementation. Insulin sensitivity was assessed using a hyperinsulinaemic, euglycaemic clamp coupled with infusion of 6,6-D₂ glucose. Muscle biopsies were measured for AA concentration and oxidative stress markers that included basal measures (2',7'-dichlorofluorescein [DCFH] oxidation, ratio of reduced-to-oxidized glutathione [GSH/GSSG] and F₂-Isoprostanes) and insulin-stimulated measures (DCFH oxidation). Antioxidant concentrations, citrate synthase activity and

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