

Vitamin C greatly decreases creatine kinase levels in animal model of statin/fibrate-induced myopathy

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Abstract

BACKGROUND AND PURPOSE Drug-induced myopathy is one of the frequent forms of muscle disease, and drugs used for hyperlipidemia, especially the statins are a common culprit, and particularly when combined with a fibrate. Clinicians usually measure plasma levels of three enzymes, creatine kinase (CK), aldolase and lactate dehydrogenase (LDH) for diagnosis of myopathy and determination of its severity. Physical exercise can aggravate statin-associated muscular disease. The question is whether antioxidants like vitamin C (Vit.C) can prevent such myopathy. **EXPERIMENTAL APPROACH** In this experiment a combination of oral atorvastatin (ATV, 80 mg/kg/day, orally) and gemfibrozil (GMF, 1000 mg/kg/day, orally) was used for ten days plus exercise in days 8, 9 and 10 to induce myopathy in rats. To add physical exercise, the forced swimming test was applied in the last three days. Ascorbic acid (50 mg/kg/day, orally) was added to ATV/GMF plus exercise regimen throughout the 10 days in the treatment group. The mean blood levels of CK, aldolase and LDH were measured in addition to swimming tolerance times. **KEY RESULTS** There was a significantly lower swimming tolerance time ($P < 0.05$) and higher CK levels ($P < 0.01$) in rats receiving ATV/GMF/Vit.C plus exercise compared with rats not taking Vit.C. LDH and aldolase didn't decrease significantly. **CONCLUSIONS & IMPLICATIONS** A protective role of vit.C against drug-induced myopathy is suggested by the findings of this study.

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