Is coenzyme-Q has a protective effect against atorvastatin induced myopathy? A histopathological & immunohistochemical study in albino rates

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Introduction
In addition to its hypercholesterolemia reducing effect, statin has pleiotropic effects that may extend their use to the treatment and prevention of various diseases such as cancer, osteoporosis, multiple sclerosis, rheumatoid arthritis, type II diabetes, and Alzheimer's disease. Therefore, the number of patients taking statin is expected to increase. The statin induced myopathy, which may result from reduced muscular coenzyme Q10 levels, limits their use. The current study investigates if the supplementing with Co Q10 could ameliorate the statin induced myopathy.

Materials and Methods
Forty adult male albino rats were randomized into 4 groups, 10 rats each and the following was administered using nasogastric tubes: Group 1: 2 ml of 0.5% carboxymethyl cellulose once daily. Group 2: 100mg/kg/ day Coenzyme Q10 dissolved in 2ml of cotton seed oil. Group 3: 10 mg/kg once daily atorvastatin dissolved in 0.5% carboxymethyl cellulose. Group 4: concomitantly received Co Q 10 and atorvastatin similar to groups II and III respectively.

Plasma creatine kinase levels were measured by using spectrophotometer. The right extensor digitorum longus muscle sections were stained for histological (Haematoxylin & Eosin, Masson trichrome and Phosphotungstic acid haematoxylin) and immunohistochemical (cytochrome C and Bax) examinations. Quantitative measures of cytochrome C and Bax were carried out using image analyzer.

Results
Atorvastatin induced increased total cytokeratin kinase, skeletal muscle variations in the sizes and shapes, necrosis, disorganization, nuclear pyknosis, karyorrhexis, karyolysis, dismantled plasma membrane, excess collagen fibers and lipid deposition in addition to loss of cross striation. Atorvastatin increased the intensity of the immune-positive reactions of Cytochrome C and Bax. These changes were ameliorated by concomitantly giving Coenzyme Q10.

Conclusion:
Co Q10 may ameliorate the atorvastatin induced skeletal muscle injury.

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