The possible protective role of ginger extract versus vitamin E against simvastatin-induced skeletal myotoxicity in adult male albino rats: histological, physiological and biochemical study.

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Abstract:

Introduction: Statins are group of drugs used to reduce total and low density lipoprotein (LDL)-cholesterol level and to reduce the morbidity and mortality of cardiovascular diseases. Meanwhile, induced skeletal muscle- specific mitochondrial impairment, oxidative stress and myotoxicity are serious side effects. Vitamin E and ginger extract are well known potent antioxidants. Aim: To study the possible protective effect of ginger extract versus vitamin E against simvastatin-induced skeletal muscle histological and the associated biophysiological changes. Materials and Methods: Forty adult male albino rats were randomly divided into four equal groups (10 rats, each); Group 1: was the control rats. Group 2: received 0.54 mg/kg/day simvastatin orally for 8 weeks. Group 3: received concomitant treatment of simvastatin and 30 mg/kg/day vitamin E orally for 8 weeks. Group 4 received concomitant treatment of simvastatin and 500mg/kg/day ginger extract orally for 8 weeks. After sacrifice, specimens were taken from the belly of the quadriceps femoris muscles of all animal groups and processed for light and electron microscopy. Biochemical tests and statistical analysis were done. Results: Group 2 showed focal areas of muscle fiber loss, mononuclear cellular infiltration and variable staining density. Ultra structurally, myofibrillar degeneration and accumulation of numerous giant infrequently damaged mitochondria were observed. The skeletal muscle fibers of animals from group 3 and group 4, both were markedly improved. Group 4 revealed obviously normal mitochondria. Conclusion: Administration of simvastatin for 8 weeks induced histological, physiological and biochemical skeletal myotoxic effects. These effects were greatly ameliorated by concomitant administration vitamin E or ginger extract. Ginger extract was more effective.

Keywords:

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