

ABSTRACT

Magdalena Lasotová

Immunohistochemical analysis of expression of SMAD proteins in experimental atherogenesis.

Diploma thesis

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Pharmacy

Background: We observed the effect of atorvastatin on the expression of phosphorylated form of SMAD 3 in atherosclerotic plaques of ApoE / LDL receptor deficient mice.

Methods: We used C57BL/6J female mice with double deficiency of apolipoprotein E and LDL receptor. Animals were divided into two groups. For 8 weeks both groups were fed a standard diet. Animals of the second group received addition of atorvastatin 50 mg/1 kg/day. Blood samples were taken for biochemical analysis. Histological staining with oil red we have taken for the determination of lipids in atherosclerotic lesions. For immunohistochemical analysis were used samples containing semilunar valves with aorta. Detection of expression of SMAD 3 protein was performed using Avidin-Biotin method (ABC) with detection using DAB.

Results: Administration of atorvastatin significantly increased level of total cholesterol and VLDL cholesterol. Despite hypercholesterolemic effect the administration of atorvastatin resulted in significant reductions of atherosclerotic lesions compared with the control group. Immunohistochemical analysis, we demonstrated expression of SMAD 3 protein in the aortic wall including endothelium, atherosclerotic plaque and vessel media. The atorvastatin group showed stronger SMAD 3 expression in atherosclerotic plaques.

Conclusions: Administration of atorvastatin showed the greater expression of SMAD 3. It has been shown, that SMAD 3 has a strong anti-inflammatory effects.