

9 ABSTRACT

Atherosclerosis and its complications are cause of more than half of mortality in western industrial countries. Cell adhesion molecules are expressed on surface of all tissues. They participates both physiological (healing stroke, regeneration of tissues, cellular growth) and pathological (participation on interaction between parts of immune system) processes in organism. The immunoglobulin superfamily includes a broad range of molecules with multiple Ig-like domains. In light of share in atherogenesis are the most remarkable members: vascular cell adhesion molecule-1 (VCAM-1), intercellular cell adhesion molecule-1 (ICAM-1).

MDOC (microdispersed oxidised cellulose) is copolymer of glucuronic acid. It occurs in the form of Ca/Na salt which is soluble in water, whereas Ca salt makes only colloid. It metabolises on glucuronic acid, whose oligomers propably float into blood. Statins are effective competitive inhibitor of key enzyme in biosynthesis of cholesterol - HMG-CoA reductase, which finally leads to reduce cholesterol level.

The aim of this thesis was found out a possible benefit of combination treatment of MDOC and atorvastatin on lipid parameters and inflammatory markers in apoE deficient mice model of atherosclerosis.

ApoE-deficient mice (n=8) were fed by atherogenic diet containing 1,25 % of cholesterol during 4 weeks (control group). In the group of MDOC mice were fed by the same atherogenic diet, supplemented with 50 mg/kg MDOC daily. In the group of atorvastatin treated mice were fed by the same atherogenic diet, supplemented with 10 mg/kg atorvastatin daily. In the combination group of MDOC and atorvastatin mice were fed by the same atherogenic diet, supplemented with 10 mg/kg atorvastatin and 50 mg/kg MDOC daily. In the following biochemical analysis of blood and immunohistochemical and stereological analysis of expression VCAM-1 and ICAM-1 was performed in the aortis sinus and aortic arch.

Results of biochemical analysis did not show any effect of atorvastatin, MDOC and even their combinations treatment on the total cholesterol and VLDL cholesterol levels. On the other hand LDL cholesterol was reduced in all 3 experimental groups in comparison with control group.

Results of immunohistochemical staining and stereological analysis showed, that expression of VCAM-1 was not significant influence by treatment in comparison with control group. On the other hand endothelial expression of ICAM-1 was significantly reduced after treatment combination of atorvastatin and MDOC (P=0,002).