ABSTRACT
Charles University in Prague, Faculty of Pharmacy in Hradec Králové
Department of Biological and Medical Sciences
Candidate: Mgr. Ivana Šínová
Consultant: Doc. PharmDr. Petr Nachtigal, Ph.D.
Title of Thesis: Effect of Spirulina platensis on heme oxygenase-1 expresion in mice

Spirulina platensis is an unicellular spiral microalgae, that can affect number of risk factors of cardiovascular diseases. It was demonstrated that Spirulina has antioxidant effects and its use in the diet could affect the expression of heme oxygenase. Heme oxygenase is an important enzyme playing role in the development of atherosclerosis and has cytoprotective effect on the vascular endothelium.
In this rigorous thesis, we studied the effect of Spirulina platensis administration on heme oxygenase-1 expression in the aorta in apoE-deficient hypercholesterolemic mouse.
ApoE-deficient mice were fed with diet containing 1% cholesterol and 40 mg of Spirulina platensis for 8 weeks. The chow diet was administrated in control group for 8 weeks. Biochemical analysis of lipid profile, Western blot analysis, immunohistochemistry and fluorescence staining in aorta were performed.
Biochemical analysis revealed no significant effect of Spirulina treatment on levels of total cholesterol, moreover Western blot analysis showed that Spirulina treatment increased HO-1 expression when compared to non-treated mice. HO-1 expression was detected in all tested slides in both groups. The expression was detected inside atherosclerotic lesions and also on endothelium. Moreover strong colocalization of macrophages and HO-1 was demonstrated suggesting that macrophages are the main source of HO-1 expresion in the atherosclerotic lesions.
The obtained results show the potential antiatherogenic effects of Spirulina platensis which might be related to HO-1 expression..