1. ABSTRACT

Spirulina platensis is a blue-green microalga belonging to the cyanobacteria family. Microalga is a large source of proteins and good fatty acid and other nutritional elements, for example iron, calcium, chromium, lithium, selenium. It also contains natural dyes chlorophyll, phycocyanin. Its antioxidant and anti-inflammatory were described.

The aim of this thesis was to determine potencial hypolipidemic effects and potential effects on endothelium of Spirulina platensis in apoE-deficient mice.

ApoE-deficient mice were fed standard diet for 2 weeks. At the age of 8 weeks the control group of animals were fed with the western type diet, which contained 21% fat and 0,15% cholesterol for 8 weeks. The same atherogenic diet was used in Spirulina platensis group, where Spirulina platensis was added to the atherogenic diet at the dosage of 20 mg per day. The biochemical analysis of lipid spectrum was done, area of atherosclerotic lesions was determined and imunohistochemical and stereological analysis of eNOS expression was performed as well.

The results of this thesis showed positive effects of Spirulina platensis on cholesterol levels, VLDL and LDL cholesterol. Moreover stereological analysis of imunohischemical staining revealed that, that endotelial expression eNOS was significantly increased by Spirulina treatment as well.

These results of this pilot study with Spirulina platensis shows its potencial hypolipidemic effects in apoE-deficient mice. Moreover these hypolipidemic effects resulted in a significant increase of eNOS in vessel endothelium suggesting positive effect of Spirulina treatment on vessel endothelium.