

## **Abstract**

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### **Title of Thesis:**

Evaluation of Cell Adhesion Molecules Expression in Mice Aorta in Animal Model of Non-alcoholic Steatohepatitis

### **Background:**

The purpose of the thesis was to observe changes in the expression of ICAM-1 and VCAM-1 in mice aorta endothelium. The study compares results of a group of mice after the administration of a NASH inducing diet and a group of mice fed by a chow diet.

### **Method:**

Two groups of C57BL/6 mice were used for this experiment. At the age of ten weeks the experimental group was transferred to a NASH inducing diet which contains 40 % of calories from fat and 0.2 % from cholesterol. In addition to this diet, the experimental group was fed by fructose and glucose dissolved in drinking water with the concentration of 42 g/l (called “FFC-type diet” – high saturated fat, high saturated fructose, high saturated cholesterol). This diet lasted for 25 weeks. The control group was fed by a standard diet for rodents (called “chow-type diet”). The obtained samples were analysed by immunohistochemical methods. For ICAM-1, the indirect three-step avidin-biotin complex method was used. VCAM-1 molecules were detected by the ImmPress™ method. Total blood cholesterol level was determined by a biochemical analysis.

**Results:**

Immunohistochemical methods provided a well evident ICAM-1 and VCAM-1 endothelial expression in aorta. Although a biochemical analysis demonstrated an important increase in total blood cholesterol level in the group of mice fed by a NASH inducing diet, when comparing the detection of ICAM-1 molecules, no significant differences between the experimental and the control group were found. The analysis of samples with marked VCAM-1 molecules also did not reveal any obvious changes in the expression.

**Conclusion:**

In spite of the fact that the administration of a diet containing 40 % calories from fat and 0.2 % from cholesterol supplemented by glucose and fructose dissolved in drinking water with the concentration of 42 g/l caused an elevation of total blood lipoproteins, this type of diet lasting for 25 weeks did not demonstrate any significant differences in an endothelial expression of adhesion molecules ICAM-1 and VCAM-1. Based on the results of this study, it is possible to conclude that using C57BL/6 mice and the application of a described diet in this time course do not lead to endothelial changes detectable by immunohistochemical methods.

**Key words:** endothelium, ICAM-1, VCAM-1, immunohistochemistry