

## **Abstract**

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Effects of *Spirulina platensis* on endothelial expression of ICAM-1 in mice

Diploma thesis

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**Background:** The aim of this diploma thesis was to identify and describe effects of administration of *Spirulina platensis* on endothelial expression of ICAM-1 in apoE-deficient mice using immunohistochemical and stereological methods.

**Methods:** We used strain C57BL/6J male mice deficient in apolipoprotein E, in age of 3 months. Mice were randomly divided into two groups, each of which was fed a special diet containing 1% cholesterol for 8 weeks. *Spirulina platensis* was added daily at a dose 40 mg to *Spirulina*-group mice. Biochemical analysis was performed in blood, and immunohistochemical and stereological analysis was performed of aorta. Detection of expression of ICAM-1 was carried out by using Avidin-Biotin Complex methodology (ABC) using diaminobenzidine detection (DAB).

**Results:** Biochemical analysis revealed no effect of *Spirulina* treatment on levels of total cholesterol after 8 weeks when compared with non-treated mice. Immunohistochemical staining showed ICAM-1 expression in all mice in the experiment. The expression was visible in luminal endothelial cells, and also inside atherosclerotic lesions. No difference in the staining intensity of ICAM-1 was visible between both groups. Stereological analysis did not shown statistically significant difference in the ICAM-1 endothelial expression after *Spirulina* treatment when compared with non-treated mice.

**Conclusions:** Change in the experimental design of future studies should show whether increasing the dose of *Spirulina platensis* can lead to demonstrate anti-atherogenic effects.