ABSTRACT

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Title of Diploma Thesis: Soluble endoglin effects on endothelial dysfunction markers in mouse aorta

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Background: The aim of the presented diploma thesis was to identify and subsequently evaluate the expression of endothelial dysfunction markers (ICAM-1, VCAM-1, P-selectin) in aortas of two groups of transgenic mice. The difference between control and experimental group was in the level of human soluble endoglin.

Methods: 12 months old male mice of transgenic strain CBAxC57BL/6J with inserted genetic information for the expression of human soluble endoglin were utilized for the experiment. The mice were divided into two groups - the experimental group (high levels of sEng) and the control group (low levels of sEng) by ELISA analysis of levels of sEng in plasma. Both groups of mice were fed with standard laboratory rodent diet. Western blot analysis of adhesion molecules ICAM-1, VCAM-1 and P-selectin in mouse aorta and subsequently ELISA analysis of plasma levels of sVCAM-1 molecule were performed. Total cholesterol and triacylglycerol levels were demonstrated by biochemical analysis.

Results: Western blot analysis showed no significant difference in the expression of ICAM-1 and VCAM-1 adhesion molecules between the control and the experimental (Sol-Eng$^+$) group of the mice. P-selectin adhesion molecule showed significantly lower expression in the Sol-Eng$^+$ group compared to the control group. ELISA analysis did not show statistically significant difference in plasma level of sVCAM-1 molecule between the control and the Sol-Eng$^+$ group. Biochemical analysis of total cholesterol and TAG levels did not show significant difference between the two groups.

Conclusions: Results revealed that the high level of soluble endoglin does not cause a significant increase in the expression of endothelial dysfunction markers ICAM-1, VCAM-1 in mouse aorta. Moreover, significant decrease in the expression of P-selectin

marker was demonstrated in Sol-Eng^{+} group of mice. Based on these results it can be concluded that long-term exposure to high levels of sEng does not induce endothelial dysfunction in the mouse aorta. However, this unexpected conclusion will have to be verified by other methods.

Keywords: endothelium, endothelial dysfunction, VCAM-1, ICAM-1, P-selectin, soluble endoglin, Western blot