ABSTRACT

Charles University, Faculty of Pharmacy in Hradec Králové
Department of Biological and Medical Sciences

Title of Diploma Thesis: Effect of long-term exposure to soluble endoglin on the expression of adhesion molecules on endothelial cells

Author of Diploma Thesis: Dominika Tuschlová
Supervisor of Diploma Thesis: PharmDr. Iveta Najmanová, Ph.D.

Background: The aim of this thesis was to find out the effect of long-term exposure to soluble endoglin (sEng) on the expression of adhesion molecules on endothelial cells (ICAM-1, VCAM-1, P-selectin). We have worked with a control and experimental group of mice on a standard diet, with different levels of sEng.

Methods: Genetically modified female mice from the CBAxC57BL/6J strain with high production of human sEng were used for analysis. These mice formed an experimental group, while mice with a low level of sEng formed a control group. They were 12 months old females. We used biochemical analysis to determine the level of total cholesterol and triacylglycerols (TAG). Levels of sVCAM-1 markers in all mice studied were determined by ELISA. The expression of the adhesion molecules ICAM-1, VCAM-1 and P-selectin was monitored and evaluated by Western blotting, where the structural protein GAPDH was used as a control.

Results: Biochemical analysis did not show a significant difference between the transgenic mice with increased sEng and the control group of mice, without increased sEng. ELISA analysis did not show any significant difference between the observed groups. Similarly, Western blot analysis did not show a significant difference in expression of the ICAM-1, VCAM-1 and P-selectin molecules.

Conclusions: Based on the results, we cannot confirm our hypothesis. We have found that the long-term exposure of sEng has no significant impact on endothelial dysfunction and that high plasma endoglin values have no significant effect on the expression of adhesion molecules endothelial cells ICAM-1, VCAM-1 and P-selectin.