

ABSTRACT

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Title of Diploma Thesis: Effect of glucose treatment on endoglin and biomarkers of endothelial dysfunction in endothelial cells

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Background: The aim of this thesis was to evaluate the expression of endoglin and biomarkers of endothelial dysfunction (eNOS, VCAM-1) in aortic endothelial cells exposed to oscillating glucose.

Methods: Human aortic endothelial cells (HAECs) were treated with alternating normal (5 mM) and high (25mM) glucose for 7 days. The control group, was treated with a constant level of normal glucose. Gene expression of endoglin, eNOS, VCAM-1, HIF1 α , KLF6, RELA and LXR was measured by quantitative real-time PCR. Flow cytometry was used to detect endoglin and VCAM-1 protein levels.

Results: Treatment with high levels of glucose resulted in significantly increased expression of endoglin, eNOS, VCAM-1, HIF1 α , RELA and LXR by means of PCR. The flow cytometry method showed a significant difference in protein levels in both endoglin and VCAM-1.

Conclusions: The results of this diploma thesis showed that oscillating glucose increases the expression of endoglin and other biomarkers of endothelial dysfunction and thus potentially play a role in its pathogenesis. However, the exact role of endoglin with respect to endothelial dysfunction has to be further evaluated.

Keywords: Endoglin, endothelium, endothelial dysfunction, hyperglycemia, VCAM-1, ICAM-1, P / E-selectin, diabetes, PCR, flow cytometry