Abstract

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Soluble endoglin: effect on bile acids and cholesterol transport in livers

Diploma thesis

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Background:

Increased plasma levels of soluble endoglin (sEng) have been shown in patients with acute heart failure, hypertension, diabetes mellitus type 2, and other metabolic and cardiovascular diseases such as e.g. hypercholesterolemia, atherosclerosis and cystic fibrosis, which influence as well liver functions. As there are no available data showing effect of sEng on the transport of cholesterol and bile acids, the aim of this diploma thesis was to describe them.

Methods:

In this study were used six months-old female mice with high level of sEng on CBAxC57BL/6J background and control mice (n = 8, in each group) fed with chow diet for three months. *In vivo* study was performed to analyze bile flow. mRNA expression of proteins responsible for cholesterol and bile acids transport and metabolism in the liver was performed by qRT-PCR.

Results:

sEng did not lead to changes neither in the bile flow nor in the concentration of cholesterol in plasma and liver. There were found no changes in the mRNA expression of *Sr-b1, Hmgcr, Abcg5, Abcg8, Acat2, Abcb4, Abcb11, Abcc2.* sEng led to decrease in mRNA expression of *Cyp7α1.*

Conclusion:

The results of the diploma thesis showed that high plasma levels of sEng decreased mRNA expression of *Cyp7a1,* rate limiting enzyme in the synthesis of bile acids *de novo*. Nevertheless, there were found no functional changes in the liver. Therefore it can be assumed that sEng will not affect metabolism of cholesterol and bile acids in our experimental model.