

ABSTRACT

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Title of diploma thesis: The effect of in vitro and ex vivo placental cells stimulation on expression of selected ABC and OATP transporters

The placenta is an organ that plays a key role throughout pregnancy for proper fetal development. One of the important functions provided by the placenta is the transport of substances between the mother and the fetus. This transfer of substances enabled mainly by membrane transporters, which are located on the apical and basal membranes of the syncytiotrophoblast. During various physiological or pathological changes in the human body, their expression and amount can vary significantly. Inflammatory reactions that may occur during pregnancy are also related to these changes, and therefore we have addressed this issue and believed that this condition may alter the expression of placental transporters.

The aim of this work was to investigate the changes in the expression of membrane transporters using placental cells on BeWo cell lines and placental villous explants that were stimulated by pro-inflammatory mediators. The change in the expression of individual ATP-binding cassettes, namely *ABCBI*, *ABCG2*, and solute carrier transporters *SLCO1A2*, *SLCO2A1*, *SLCO3A1*, *SLCO4A1*, *SLCO1B3*, *SLCO2B1* was examined in the human placenta.

Based on our evaluated data, we can conclude that the pro-inflammatory stimulation did not in general lead to a statistically significant effect on the expression of placental ABC and OATP transporters. Nevertheless, the results of this preliminary

work indicate possible increase in the expression of *ABCG2* and some of the OATP transporters, mainly those involved in transport of prostaglandins, when the placental tissue is exposed to potent pro-inflammatory stimulators such as IL-6 and INF γ . These results would, however, call for verification using another placental model, and verifying the level of the membrane proteins and their functions.

Keywords: placenta, stimulation, transporter