Naziv projekta: HIgh-density lipoprotein MetabolOMe research to improve pregnancy outcome

Akronim: HI-MOM

Budžet: 276.000, 00 EUR (32.568.000,00 DIN)

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Abstract

In this Project we will apply an innovative approach in the lipid research during pregnancy. Although lipid profile in pregnancy has been investigated, changes in structure and function of high-density lipoprotein (HDL) are largely unexplored. HDL-cholesterol level increases during pregnancy and this is considered as a protective metabolic adaptation, which is frequently absent in pregnancy complications. Yet, protective role of HDL particles resides on its complex composition that goes beyond its cholesterol concentration. HI-MOM project will for the first time explore metabolomic aspects and functionality of HDL (HDL-ome) during uncomplicated and high-risk pregnancy. Also, we will investigate the association between pregnancy-induced HDL-ome changes and epigenetic modifications in maternal and cord blood.

The Project is designed as a two-stage research, involving 134 pregnant women (91 with high-risk pregnancy and 43 with uncomplicated pregnancy) in the first stage and 200 randomly selected pregnant women in the second stage. For HDL-ome research we will use UHPLC/MS-MS, qPCR, immunoassays, electrophoresis and spectrophotometry techniques. In this Project specific changes of HDL-ome will be revealed and multimarker models for prediction and monitoring of pregnancy outcome will be proposed. HI-MOM project will highlight critical points of HDL-ome alterations and develop a clinical and laboratory

protocol for pregnancy monitoring. Moreover, we expect to identify specific epigenetic patterns associated with HDL-ome changes during pregnancy, which could affect future cardiometabolic maternal and child health.

This Project should bring improved understanding of metabolic background for development of pregnancy complications and consequently enhance pregnancy monitoring and management. Moreover, we hope that this research will lay groundwork for future personalized approach with a long-lasting aim to improve cardiometabolic health of both mother and child.