

## **Abstract**

Metabolic syndrome (MS) and end-stage renal disease (ESRD) represent two clinical-pathologic states with increased risk of atherosclerotic cardiovascular complications with considerable impact on the quality of life of the patients. The knowledge about the changes in distribution of individual lipoprotein subfractions could contribute to the estimation of risk of atherosclerosis development.

The studies presented in this thesis aimed at analyses of subfractions of LDL and HDL in the abovementioned pathologic states; moreover, we tried to elucidate the associations of changes in lipoprotein subfractions with clinical as well as biochemical alterations. The Study I was a placebo controlled study observing the effect of polyunsaturated fatty acids of n-3 family (PUFA n-3) administration to patients with MS who were divided to statin-treated ones (36 patients), and those without statin therapy (24 probands). The Study II comprised of 57 patients with ESRD on high volume haemodiafiltration (HV-HDF). In this Study, the parameters after 5-year follow-up were compared with baseline characteristics. Also, we included comparisons with the control group of 50 age and sex matched patients without the signs of ESRD.

In Study I, we observed lowering of triacylglycerol and cholesterol content in VLDL lipoproteins and increased levels of HDL-C after PUFA n-3 supplementation. In the subgroup of patients with baseline higher concentration of cholesterol in small dense LDL (sdLDL), the supplementation of PUFA n-3 led to decrease of cholesterol content in sdLDL.

The results of Study II showed significant differences in HDL subfraction and apoB containing lipoproteins (higher content of cholesterol in VLDL as well as IDL, lower cholesterol content in large LDL) in patients with ESRD compared to control group. The survival analyses in ESRD patients revealed the beneficial effect of redistribution of lipoprotein profiles toward small HDL particles.

The result in the thesis show that in patients with MS antiatherogenic effect of PUFA n-3 can be connected with the changes in lipoprotein metabolism. Also, the different lipoprotein profile is closely related to survival of ESRD in chronic haemodialysis programme.