

Abstract

Abnormalities of lipid metabolism are considered risk factors for cardiovascular, metabolic, nephrologic diseases and some malignancies, as well. Nowadays, a lot of effort is devoted to study new risk factors and surrogate markers of conditions mentioned above to improve their prognosis and decrease mortality. The aim of this thesis was to provide a comprehensive survey of lipid metabolism, characteristics of different lipid compounds in health and diseases and of possibilities of utilization of selected lipid parameters in the diagnostics of pathological conditions listed above. Selected lipid parameters were observed in several studies, focused on specific pathological conditions. Besides conventional lipid analytes, the composition of fatty acids in plasma lipid pools was studied in healthy controls, and in the patients suffering from metabolic syndrome, chronic pancreatitis, and pancreatic cancer, as well. Markers of an oxidative stress (oxidatively modified LDL particles and conjugated dienes in precipitated LDL) were assessed in healthy controls, patients with metabolic syndrome, chronic pancreatitis, pancreatic cancer, and in the patients with different concentrations of plasma apoB-48, too. LDL particles subfraction were investigated in healthy controls, in the patients with different concentrations of plasma apoB-48 a and in the persons suffering from end-stage renal disease. The obtained data were evaluated using multivariate statistical analytic techniques (linear diskriminant analysis, factor analysis, cluster analysis). The results of works, that were included in this thesis have shown that application of advanced lipidomics, using both sophisticated analytical biochemical methods and different multivariate statistical analyses, can provide plenty of data, enabling us to find biomarkers of key steps in pathogenesis of abovementioned pathological conditions.