Pancreatic cancer (PDAC) is malignancy with increasing incidence. Most of the patients are diagnosed in advanced stages of the disease. Due to its low efficacy CA19-9 is neither useful for identification of early PDAC nor for its screening. There is strong evidence about the relationship between extracellular matrix (ECM), tumour stroma and PDAC cells. Thus, retinol storing pancreatic stellate cells which produce majority of ECM seem to be promising target of the research.

The aim of this work was to analyse to broad spectre of circulating biomarkers and define one or more biomarkers, which can identify PDAC among chronic pancreatitis (ChP), type 2 diabetes mellitus (T2DM) and healthy controls. Another goal was to measure levels of ATRA and retinol in these groups and define their role as a biomarker. We used several methods, mainly ELISA, to measure concentrations of many common and special parameters in 220 patients with PDAC, T2DM, ChP and healthy controls. Based on the differences in concentrations, panels of biomarkers were defined, and their efficacy was compared to CA19-9. We used high performance liquid chromatography (HPLC) with UV detection to determine the serum levels of retinol and ATRA among those groups.

The result of our study are panels of biomarkers which define PDAC among other groups better ($p<0,05$) than solitary CA19-9. Panel „CA19-9, AAT, IGFBP2, albumin, ALP, Reg3a, HSP27“ detects PDAC among T2DM, panel „S100A11, CA72-4, AAT, CA19-9, CB, MMP-7, S100P-s, Reg3a“ detects PDAC among ChP, panel „MMP-7, Reg3a, sICAM1, OPG, CB, ferritin detects PDAC among controls better that CA 19-9. After exclusion of CA19-9 from the panels, set of markers „CEA, HbA1c, AST, HDL-chol., prealbumin, SAA, IGF-2, total protein“ detects PDAC among healthy controls better than solitary CA19-9.

We also proved significantly lower levels of retinol in PDAC compared to other groups and significant decrease of ATRA levels in PDAC compared to healthy controls and T2DM.

The results confirm heterogenic changes accompanying PDAC. Although not suitable as a diagnostic biomarker of early PDAC, retinol and ATRA seem to have important role in PDAC pathogenesis.