

7th International Conference on

Proteomics & Bioinformatics

October 24-26, 2016 Rome, Italy

Blood plasma proteomic profiling of breast cancer patients for biomarkers discovery

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Breast cancer remains one of the most common women oncological diseases in the world. The success of therapy depends on early diagnostics and efficient treatment. Early diagnostics of breast cancer is complicated by asymptomatic development of the disease and the lack of reliable markers. Proteomics is shown to be an effective approach for discovery of disease biomarkers. Two dimensional (2D) gel-electrophoresis represents a powerful and widely used proteomic method for the analysis of complex protein mixtures. The aim of the study was to find unique biomarkers for early diagnostics and monitoring of breast cancer using proteomic analysis. Blood plasma samples from women with clinically and histological confirmed breast cancer, fibroadenoma and healthy donors were used in the study. The subtypes of malignant breast tumors were based on the standard histological criteria. Blood plasma proteins were separated by 2D gel-electrophoresis and identified by MALDI-TOF mass-spectrometry. It was found that blood plasma proteomic profiles were different for patients with various molecular subtypes of breast cancer. Identified differences were evident in the appearance of additional new proteins and changes in the expression of proteins present in norm. MALDI-TOF mass-spectrometry revealed the panel of proteins, namely clusterin, α 2-HS-glycoprotein, haptoglobin α 1 and serum amyloid A, which reflects a degree of tumor malignancy and varies depending on the molecular subtypes of breast cancer. Current data provides an advance to develop supplemental methods for non-invasive preclinical diagnostics and to reduce the risk of the disease progression.

Biography

Dubovskaya L V has completed her PhD from the Institute of Biophysics and Cell Engineering of National Academy of Sciences of Belarus. She is the Director of the Institute of Biophysics and Cell Engineering of National Academy of Sciences of Belarus. She has published more than 35 papers in reputed journals and has been serving as a Peer Review Member of repute.

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