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Title: Protein markers in the exhaled breath condensate of lung carcinoma patients

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Body: Background: Analysis of exhaled breath condensate (EBC) is an emerging method of noninvasive diagnosis of pulmonary diseases. The growing number of biomarkers identified in the EBC, allow to diagnose a wide range of diseases. The aim of this study was to identify protein markers in EBC of lung cancer patients by mass spectrometry. Materials and methods: EBC of 25 patients (mean age -55 years) with different forms of lung cancer were collected using R-Tube™, freeze dried, treated by trypsin. Bathes were analyzed by nanoflow LC-MS/MS with a 7-Tesla Finnigan LTQ-FT mass spectrometer. The list of direct peptide mass and mass of their fragments, with following identification of proteins in the Mascot databases was generated by means of Bioworks Browser 3.1SR. Previously obtained data from healthy volunteers served as a control. Results: Proteins which are non-specific for healthy people EBC were identified at more than half samples e.g. Keratin II-2-protein used in the test-systems for the differentiation of epithelial origin cells circulating in blood of cancer diseased persons, Collagen α - the protein that reflects the degradation of connective tissue cells; Hemoglobin subunits - characterized bleeding, as evidenced by clinical disease. In 31% of EBC samples detected proteins are also not typical of the healthy volunteers: Human lactoferrin, Zinc finger CCCH domain-containing protein 11A, Sex hormone-binding globulin, Protein shroom3. In conclusion, the identification of specific proteins in the EBC of patients with cancer of respiratory system and their comparing with healthy donor matrix can provide significant data for early diagnosis of onco-pulmonary disease.