

MICROVESICLES ISOLATED FROM BRONCHIAL-ALVEOLAR LAVAGE AND THEIR USE IN MITOCHONDRIAL RESPIRATORY SYSTEM STUDIES

Sławomir Michalak^{1,2}, Tomasz Piorunek³, Magdalena Kostrzewska³, Joanna Rybacka - Mossakowska¹, Wojciech Kozubski⁴, Halina Batura - Gabryel³

¹ Department of Neurochemistry and Neuropathology, Poznan University of Medical Sciences, 49 Przybyszewskiego St., 60-355 Poznan, Poland

² Neuroimmunological Unit, Polish Academy of Sciences, 49 Przybyszewskiego St., 60-355 Poznan, Poland

³ Department of Pulmonology, Allergology and Respiratory Oncology, Poznan University of Medical Sciences, 84 Szamarzewskiego St., 60-569 Poznan, Poland

⁴ Department of Neurology Poznan University of Medical Sciences, 49 Przybyszewskiego St., 60-355 Poznan, Poland

Introduction. Microvesicles are cell membrane-bound structures which shed from the cells and migrate in body fluids. Microvesicles can transfer proteins and organelles (e. g mitochondria) between cells. The aim of the study was to evaluate the method for the isolation of microvesicles from bronchial-alveolar lavage BAL samples.

Material and methods BAL was obtained from consecutive patients in Department of Pulmonology Allergology and Respiratory Oncology Poznan University of Medical Sciences. After initial centrifugation microvesicles were isolated from supernatant with the use of qEV columns. Absorbance, protein content and ATPase activity were analyzed in eluted fractions. Furthermore, mitochondrial respiratory system was analyzed in the fractions by means of high-resolution respirometry with the use of O2k oxygraph.

Results. We have found that microvesicles can be isolated from BAL samples and activity of ATPase is the best indicator of microvesicles presence in the fraction eluted from qEV column. Absorbance measurement is easier and not time-consuming but ATPase activity is more specific marker of microvesicles. We were able to analyse mitochondrial respiratory coupling states in microvesicles fraction.

Conclusions. Microvesicles isolated from BAL samples with the use of size exclusion columns can be used for further studies including mitochondrial respiratory states.