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Palladin, a novel end MT biomarker?

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Fibrosis is defined by the excess deposition of a collagen-rich extracellular matrix (ECM). An important source of mesenchymal cells participating in the fibrotic process might be endothelial to mesenchymal transition (EndMT). This process could be initiated by transforming growth factor-beta (TGF-β) and transcription factor such as Snail. Recent study suggests that palladin, a novel actin cytoskeleton-associated protein, is actively involved in the regulation of cell-ECM interaction. In our research we would like to analyze the early stages of fibrosis. Our experimental model uses endothelial cells enriched in Snail. To establish profiles of the endothelial cell genes involved in the early stages of fibrosis HMEC-1 cells (Human Microvascular Fndothelial Cell-1) were stimulated with TGF- β1 at the concentration of 5 ng/ml for 48 h. Profile of endothelial and mesenchymal cell markers were determined to characterize early stage of fibrosis. Differential proteomics to perform a global quantitative comparison of two proteomes with Orbitrap Velos mass spectrometers and iTRAQ - a labeling-based method analysis of HMEC-1 displayed a total number of 5522 proteins among those 17 were overexpressed and 27 were down-regulated after TGF-β1 stimulation. We identified overexpression of palladin. Furthermore to establish the level of palladin involved in the early stages of fibrosis, HMEC-1 were transfected with pcDNA3.1-Snail. TGF-β1 treatment of HMEC-1 leads to increase of the level of Snail and palladin. Otherwise overexpression of Snail in HMEC-1 leads to enhanced expression of palladin. In conclusion, our results indicate the regulatory role of palladin in fibrotic process.

Biography

Katarzyna Gawrys graduated with a Bachelor's degree in Medical Biotechnology at Medical University of Silesia in 2010 and a Master degree in Medical Biotechnology at Jagiellonian University in Cracow in 2012. She held numerous practices in research units and has participated in many conferences and in specialized trainings. She is a PhD student at Medical University of Lodz, Department of Biomedical Sciences, Cytobiology and Proteomics.

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