

Impact of Aquaporin 9 modulation in HepG2 model of hepatic lipid overload



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Host: Dr Deepak Choudhury

Seminar Abstract

Obesity is a growing problem in modern society, increasing steadily between adults and children. Adipose tissue accumulation increases the release of free fatty acids and free glycerol in plasma, promoting the accumulation of bioactive lipids in the liver and skeletal muscles. Here, the lipid droplets accumulation correlates with the development of insulin resistance and type 2 diabetes. AQP9 is a glycerol and H₂O₂ transporter expressed in the liver. From a preliminary untargeted proteomic analysis on human liver samples, we saw an upregulation of AQP9 and the proteins connected with lipid droplets accumulation and antioxidant response in insulin resistant and type 2 diabetic patients. We elucidated the impact of AQP9 on the lipid overload and oxidative stress homeostasis in HepG2 cells using microscopy and proteomics techniques. Furthermore, we developed a novel LC/MS proteomic approach for the analysis of experimental and clinical samples introducing the overlapped windows concept in a TOF-based instrument.

About the Speaker

I obtained the PhD title at the Medical University of Białystok (Poland) under the Marie Curie - Horizon 2020 European programme titled: "ImPRESS: International Interdisciplinary PhD studies in Biomedical Research and Biostatistics.". There I worked in a proteomics unit studying liver insulin resistance development. In this period, I cooperated with the Dept. of Bioengineering at the University Carlos III of Madrid (Spain), where I had a long research internship. I obtained my BSc and MSc titles in Industrial Biotechnologies at the University of Milano-Bicocca (Italy). In 2013 I had an intern in the biochemistry laboratory of the IBSA SA company (Switzerland). I spent my undergraduate period at the Protein transport and secretion unit, San Raffaele Scientific Institute in Milan (Italy), where I continued for the following two years as a Research fellow. There I worked in the field of the redox biology, studying mainly aquaporin 8 and aquaporin 11.