

13th Euro-Global Gastroenterology Conference

August 20-21, 2018 | Rome, Italy

Liver mitochondria KATP channel is highly sensitive to KATP channel opener diazoxide

Olga Akopova, Liudmila Kolchinskaya, Valentina Nosar, Iryna Mankovska and Vadim Sagach

A A Bogomoletz Institute of Physiology - NAS, Ukraine

The functional consequences of mitochondrial KATP channel (mKATP channel) opening in liver are less studied as compared with heart and brain. In this work we studied liver mKATP channel opening with KATP channels opener diazoxide without Mg-ATP. Using polarography and light scattering, we found that full activation by diazoxide occurred at $<0.5 \mu\text{M}$ with parallel increase in ATP-insensitive K^+ -uptake. The rise of diazoxide concentration up to $100 \mu\text{M}$ augmented ATP-insensitive K^+ -uptake, but not mKATP channel activity. We concluded that native mKATP channel was by the order more sensitive to diazoxide without Mg-ATP, which shifted channel affinity to micromolar concentration level. Uncoupling effect of liver mKATP channel opening was estimated based on its share in oxygen consumption. Obtained results reveal novel aspects of mKATP channel properties. Based on the experiments, we hypothesized that native liver mKATP channel might comprise high affinity sites for diazoxide binding in the absence of Mg-ATP.

Biography

Olga V Akopova has specialized in Biochemistry and Physiology. She is a Principal Investigator in Circulation Department of AA Bogomoletz Institute of Physiology, National Academy of Science of Ukraine, Kiev, Ukraine. Her research interests include: 1) mitochondrial potassium transport. 2) mKATP channels, their cell-specific properties and the interaction with physiological and pharmacological ligands. 3) the impact of K^+ transport on mitochondrial bioenergetics and metabolism (reactive oxygen and nitrogen species production, Ca^{2+} transport, ATP synthesis).

ov_akopova@ukr.net

Notes: