JCK Poster

JCK Poster 1 (II-JCKP1)

Basics/New Insights/Others

Chair:Tran Cong Bao Phung(Cardiology Department, Children Hospital 1, Ho Chi Minh City, VietNam) Sat. Jul 8, 2017 6:15 PM - 7:15 PM Poster Presentation Area (Exhibition and Event Hall)

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[II-JCKP1-07]T-VDCC CaV3.1 and CaV3.2 involves in pulmonary

hypertension

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Pulmonary hypertension (PH) is associated with hyperreactivity to vasoconstrictor agents and remodelling of pulmonary arteries with proliferation and migration of pulmonary arterial smooth muscle cells (PASMCs). Intracellular Ca²⁺ regulates many cellular processes, such as cell cycle progression, proliferation and apoptosis. Voltage-dependent Ca²⁺ channels(VDCC) can regulate intracellular Ca²⁺ levels. L-, T- and P/Q-type channels have been identified in vascular smooth muscle cells. L-VDCC inhibitors are not so efficient in the treatment of PH. T-type channels have been cloned, and systematically named CaV3.1, CaV3.2 and CaV3.3 T-type channels, respectively. T-type calcium channel antagonists, mibefradil and NNC-55-0396 inhibit cell proliferation in leukemia cell lines. Chronic hypoxia selectively enhances T-VDCC activity in pulmonary artery. We hypothesize that T-VDCC could constitute an alternative therapeutic target in PH.

In our research, we find that the expression of CaV3.1 and CaV3.2 are up-regulated in MCT- or hypoxiainduced PAH. Inhibition of T-VDCC CaV3.1 and CaV3.2 suppresses the proliferation of PASMC during hypoxia by delaying the G1/S phase conversion, and inhibition of CaV3.1 and CaV3.2 alleviates progression of MCT-induced PAH in rats. Further research indicates that blockade of CaV3.1 and CaV3.2 may delay G1/S phase through p-ERK/CCND1 signaling pathway. These observations may provide new mechanistic insights into pulmonary hypertension.