



## Conference Abstract

# P.35 TASK-1 Channels Play an Anticontractile Role in Rat Septal Coronary Artery Under Pharmacological Blockade of Endothelium

B.S. Varvara Lazarenko<sup>1,\*</sup>, Anastasia Shvetsova<sup>1</sup>, Dina Gaynullina<sup>1</sup>, Rudolph Schubert<sup>2</sup>

<sup>1</sup>Faculty of Biology, M.V. Lomonosov Moscow State University

<sup>2</sup>Department of Physiology, Medical Faculty, Augsburg University

### Keywords

TASK-1  
vascular tone

### ABSTRACT

**Purpose/Background/Objectives:** TASK-1 (TWIK-related acid-sensitive potassium) channels conduct background  $K^+$  currents in smooth muscle cells of pulmonary arteries suppressing vasocontraction. However, the vasomotor role of TASK-1 channels in systemic arteries as well as their regulation by the endothelium are poorly understood. Therefore, we investigated the impact of TASK-1 channels on the regulation of arterial contraction in the presence or absence of the relaxing influence of the endothelium in the brain and the heart, important regions of the systemic circulation.

**Methods:** Segments of basilar and septal coronary arteries (2-mm long) were isolated from male Wistar rats and mounted in a wire myograph. The functional impact of TASK-1 channels was assessed by the effect of their blocker AVE1231 (1  $\mu$ M) on contractile responses to the thromboxane A2 receptor agonist U46619. Experiments were performed first on endothelium-intact arteries and then after combined blockade of NO-synthase (L-NNA, 100  $\mu$ M), cyclooxygenase (indomethacin, 10  $\mu$ M) and EDHF (TRAM34, 1  $\mu$ M and UCL1684, 0.1  $\mu$ M).

**Results:** AVE1231 did not change basal tone and contractile responses to U46619 of either basilar or septal coronary arteries with intact endothelium. However, incubation with AVE1231 after pharmacological blockade of the endothelium led to the development of basal tone and augmented contractile responses to U46619 in septal coronary arteries, but not in basilar arteries.

**Conclusions:** TASK-1 channels may play a protective anticontractile role in the coronary circulation under conditions of endothelial dysfunction.

Supported by RSF (grant N 20-75-00027). We thank Sanofi for the gift of AVE1231.

### REFERENCE

- [1] Antigny F, Hautefort A, Meloche J, Belacel-Ouari M, Manoury B, Rucker-Martin C, et al. Potassium channel subfamily K member 3 (KCNK3) contributes to the development of pulmonary arterial hypertension. *Circulation* 2016;133:1371–85.

© 2020 Association for Research into Arterial Structure and Physiology. Publishing services by Atlantis Press International B.V. This is an open access article distributed under the CC BY-NC 4.0 license (<http://creativecommons.org/licenses/by-nc/4.0/>).