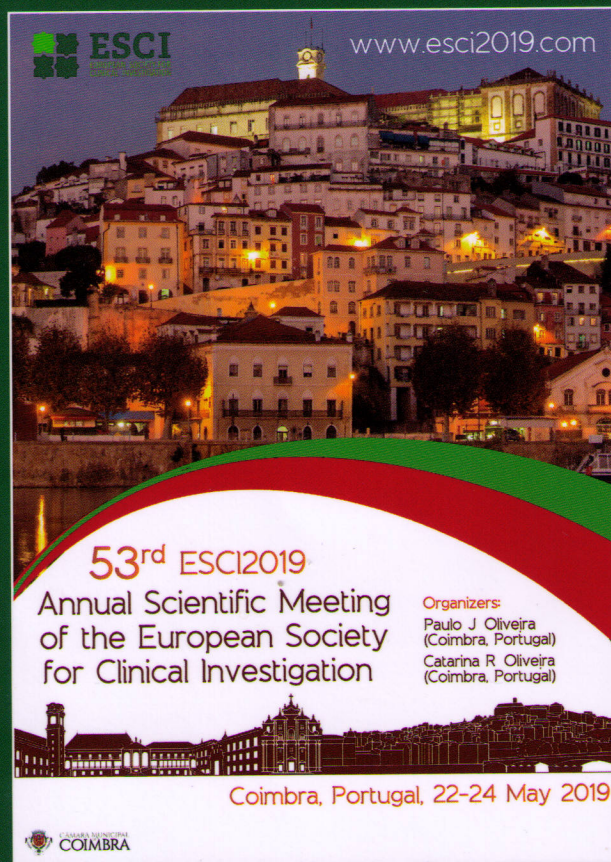


# European Journal of Clinical Investigation

53rd Annual Scientific Meeting of the  
European Society for Clinical Investigation



Coimbra, Portugal  
22nd – 24th May 2019

ABSTRACT BOOK



## Abstracts of the 53<sup>rd</sup> Annual Scientific Meeting of the European Society for Clinical Investigation

“The Clocks of Metabolism and Disease”

Coimbra, Portugal

22nd – 24th May 2019

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Dona Ines  
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Vila Galé  
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Dona Ines



### **P104-T | Comparative analysis of the influence of If blockade on newborn and adult rats Langendorff-isolated heart**

Nafisa Ziyatdinova; Anna Kuptsova; Milyausha Sungatullina; Alina Galieva; Timur Zefirov

Kazan (Volga Region) Federal University, Kazan, Russia

HCN channels regulate cardiac rate control altering the activity of hyperpolarization activated currents (If). This study performed comparative analysis of the influence of If blockade on the Langendorff-isolated heart of newborn and adult rats.

Ex vivo experiments were done on white outbred newborn rats without sympathetic innervation of the heart. Adult animals with a formed system of autonomous regulation of the heart were chosen as a control group. Isolated heart was perfused in the installation of Langendorff (ADInstruments) Krebs-Henseleit solution. The coronary flow (CF) and heart rate (HR) were calculated along the curve. The signals were recorded in a PowerLab system (ADInstruments) with the help of LabChart Pro 8.0 software. ZD7288 (Sigma) at the concentrations range of  $10^{-9}$  to  $10^{-5}$  mol/L has been used for If current blockade. The data analyzed using Student's *t*-test. ZD7288  $10^{-9}$  mol/L decreased of newborn rats HR by 27% ( $P \leq 0.05$ ). ZD7288  $10^{-8}$  to  $10^{-5}$  mol/L caused multidirectional effects of newborn rats HR. The If blocker  $10^{-5}$  mol/L reduced CF of the newborn rats isolated heart by 10% ( $P \leq 0.01$ ). Other concentrations of the blocker did not influence of newborn rats CF. In the control group ZD7288  $10^{-9}$  mol/L and  $10^{-6}$  mol/L decreased HR by 25% ( $P \leq 0.01$ ), and 22% ( $P \leq 0.01$ ), respectively. If blocker  $10^{-9}$  mol/L reduced CF of adult animals by 21% ( $P \leq 0.001$ ). ZD7288 in concentrations of  $10^{-8}$  to  $10^{-5}$  mol/L did not change CF in adult animals.

If blockade affected newborn and adult rats isolated hearts HR and CF. The dose-dependent effect of ZD7288 was different in newborn and adult animals.

Work supported by Program of Competitive Growth of KFU, Russian Foundation for Basic Research and Government of the Republic of Tatarstan № 18-44-160022, RFBR № 17-04-00071.

### **P105-T | The $\alpha 2$ B-adrenoceptor selective blockade influence on newborn rat myocardium inotropy**

Timur Zefirov; Luiza Khisamieva; Alina Galieva; Tatiana Zefirova; Nafisa Ziyatdinova

Kazan (Volga Region) Federal University, Kazan, Russia

Previous studies showed  $\alpha 2$ -adrenergic receptors role in various physiological functions in the regulation of the

cardiovascular system and central nervous system. All three subtypes of  $\alpha 2$ -adrenergic receptors have been found in rats cardiac tissue including right atrium and left ventricle. The maximum expression of  $\alpha 2$ -adrenergic receptors in rats heart noted in fetal cardiac tissue. The goal of the study was to perform comparative analysis of  $\alpha 2$ B-adrenergic receptors blockade influence with imyxan hydrochloride on the inotropy of atrium and ventricle myocardium in newborn and adult rats.

The rats were anesthetized with intraperitoneal injection of urethane. Registration of isometric contraction of ventricular and atrial myocardial strips rats was carried out on the MP-150 installation (BIOPAC Systems). To block  $\alpha 2$ B—adrenergic receptors, imyxan hydrochloride was used in the concentrations of  $10^{-5}$  to  $10^{-9}$  mol/L.

All studied concentrations of imyxan hydrochloride induced negative effect on newborn rats atria and ventricular contraction force. The blockade of  $\alpha 2$ B-adrenoreceptors in all concentrations resulted in positive inotropic effect in the adult rats atria and in the ventricles. The change of contraction force after  $\alpha 2$ B-adrenoreceptors blockade in the ventricles was more pronounced than in the atria.

Thus, the effect of  $\alpha 2$ B-adrenoreceptors blockade with imyxan hydrochloride depends on the animal age.

Work supported by Program of Competitive Growth of KFU, Russian Foundation for Basic Research and Government of the Republic of Tatarstan № 18-44-160022, RFBR № 17-04-00071.

### **P106-T | The influence of $\alpha 1$ A-ARs inhibition on the isolated heart chronotropy and coronary flow**

Timur Zefirov; Insaf Khabibrakhmanov; Alina Galieva; Milyausha Sungatullina; Nafisa Ziyatdinova

Kazan (Volga Region) Federal University, Kazan, Russia

Alpha1-adrenergic receptors ( $\alpha 1$ -ARs) participate in many adaptive processes. The important effect of stimulation of  $\alpha 1$ -ARs is constriction of blood vessels and increase in arterial blood pressure.  $\alpha 1$ A and  $\alpha 1$ B subtypes of adrenoreceptors are densely represented in the myocardium, while  $\alpha 1$ D-ARs are found in smooth muscle cells and coronary arteries. The role of  $\alpha 1$ -ARs in the regulation of the heart rhythm is confirmed by previous studies, which showed that stimulation of  $\alpha 1$ -ARs with methoxamine decreases the HR of the 20-week-old rats hearts. The goal of this study was to assess the effect of blockade of  $\alpha 1$ A-ARs on isolated heart of 1- and 20-week-old rats. The rats were anesthetized intraperitoneally with 25% urethane (800 mg/kg body weight). The heart was perfused in the Langendorff system (ADInstruments) with a Krebs-Henseleit solution at 37°C and constant hydrostatic pressure of