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ABSTRACT BOOK

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Prof. Gema Frühbeck

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eliminates the positive effect caused by Leu(31)Pro(34) NPY in all age groups, which indicates the involvement of this receptor subtype in myocardial contractility.
NPY (10^{-6}–10^{-10} M) reduced the force of myocardial contraction in 7-day-old animals and does not cause significant changes in the parameters of isometric myocardial contraction in 100-day-old rats. NPY in the presence of selective blocker of Y5R, CGP 71683 (1·4 mM), reduced the force of myocardial contraction in 7-day-old animals and did not affect in 100-day-old animals, which indicates the involvement of this receptor subtype in myocardial contractility only in newborn animals.
Work supported by Program of Competitive Growth of KFU and Russian Foundation for Basic Research (grant No. 17-04-00071).

P126-T | Developmental changes of ATP influence to rats heart parameters

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ATP can participate in the intercellular signaling, where it acts as a cotransmitter on specific purinoreceptors. In the rat cardiomyocytes have been found ionotropic P2X1,2,4,5 and metabotropic P2Y1,2,4,6,11 receptors. The results of the studies are contradictory, because ATP rapidly dissociates to adenosine, which acts on its receptors causing a multidirectional effect. During the postnatal development, the percentage of P2X2 and P2X6 is kept at the same level with a peak for P2X3 purinoreceptors at 20 days.
The influence of ATP on the heart has been studied. Registration of isometric contraction of atrial myocardium strips was performed with a preserved sinus node and stimulation of 6 pulses per minute in 7- and 100-day-old rats. Intracellular recording of the electrical activity was performed using glass microelectrodes with a resistance of 30–60 MΩ.
ATP with a concentration of 10^{-4}–10^{-7} M causes a dose-dependent reduction in the striae of the myocardium of the atria and ventricles. The maximum increase was observed in the concentration of 10^{-7} M in newborns and 10^{-6} M in adult animals. When ATP was added to the strips of the myocardium with a preserved sinus node, a short-term increase in the frequency and force of contraction results was found. Increasing the concentration of the agonist led to a decrease in the strength of contraction of the myocardium strips. Adding this concentration to the atrial preparation with a preserved sinus node caused a short-term increase in the heart rate, an increase in the duration of 20%, 50%, and 90% of the repolarization.
The increase of myocardial contractility with the addition of ATP is associated with the activation of P2X1 purinoreceptors which play the most important role in the positive inotropic effect in newborn rats.
Work supported by Program of Competitive Growth of KFU and Russian Foundation for Basic Research (grant No. 17-04-00071).

P127-T | Involvement of α-adrenoreceptors of rats myocardial contractility dopaminergic regulation during postnatal ontogenesis

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The regulatory effect of dopamine, especially in ontogenesis, on myocardial contractility has been given little attention. The function of dopamine is initiated through the activation of dopamine receptors found in the heart of the rat and human. Dopamine also interacts with α- and β-adrenergic receptors. The purpose of this study is to study the effect of different dopamine concentrations on myocardium contractility in 42-, 56- and 100-day-old rats with blockaded α-adrenergic receptors.
Registration of isometric contraction of atrial and ventricular myocardial striae of 42-, 56- and 100-day-old rats was carried out on a PowerLab device with MLT 050/D force sensor (ADInstruments). We determined the reaction contraction force of the atrium and ventricle myocardium at dopamine range of 10^{-5}–10^{-9} M. 10^{-6} M concentration of phentolamine was used for the blockade of α-adrenergic.
Dopamine blockade by phentolamine increased the force of atrial contractions by 8% (10^{-6} M) and in the ventricles by 15% (10^{-5} M) in 42-day-old rats after. All the other dopamine concentrations lead to a decrease in contractility of strips of myocardium of Atria and ventricles.
Phentolamine induced dopamine blockade increased the force of contraction of the Atria and ventricles by 13–20% (10^{-5}, 10^{-6}, 10^{-9} M) in 56-day-old rats. We observed a 19% reduced contraction force of the atrial and ventricular strips of the myocardium after treatment with 10^{-7} and 10^{-8} M concentrations of dopamine.
100-day-old animals, phentolamine induced dopamine blockade increased the force of atrial contractions in the studied range of concentrations (10^{-5}, 10^{-6}, 10^{-7}, 10^{-9} M) and reduces the force of contraction of strips of