

The effect of blockade of α 2A/D-adrenoreceptors on myocardial contractility in developing rats

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Abstract

© 2016, International Journal of Pharmacy and Technology. All rights reserved. Previously, it was believed that α 2-AR in the mammal heart modulate regulatory influence, by ranging presynaptically and regulating the release of norepinephrine. Currently, it is known that α 2-AR are present in the smooth vascular muscles, on the presynaptic adrenergic fiber membranes, and on the postsynaptic membranes of myocytes. Further investigation of the functional characteristics of α 2-adrenergic receptor subtypes will help to clarify their role in the regulation of the cardiovascular system of the developing organism. We studied in vitro the contractile activity of the myocardium strips. The atria and ventricle strips of rats at different stages of early postnatal ontogenesis were placed in the reservoir with process solution. To solve the set problem, the process solution was added with selective blocker α 2A/D-AR (RX 821002), at a concentration of 10^{-5} , 10^{-6} , 10^{-7} , 10^{-8} , 10^{-9} mol. Contractile force (F) was stated in grams (g). The study of dose-dependent response of myocardial contractile function of the atria and ventricles in rats of different ages to the introduction of α 2A/D-adrenergic receptor blocker in the concentration range of 10^{-9} - 10^{-5} has shown that the blockade of the α 2A/D-AR subtypes causes multidirectional inotropic effect in animals of different age groups. A multidirectional effect and age characteristics of the blockade α 2-adrenergic receptor subtypes may be associated with changes in the synthesis, localization and activity of various receptor structures of the heart.

Keywords

A rat, Chronotropic effect, Heart, α 2-Adrenergic receptors