Abstract:
Since 20 years the concept of specific imidazoline receptors has remained controversial. The problem with imidazoline receptors is mostly due to their functional similarity to \(\alpha\)-adrenoceptors. In this work, a pharmacodynamic model of isolated rat jejunum longitudinal muscle strips constricted with acetylcholine (Ach) was applied to separate functional properties of the two types of receptors. Relaxation of the preparation was measured as a function of concentration of 2-(benzofuranyl)-2-imidazoline (2-BFI), a specific imidazoline \(\mathbf{I}\) receptor ligand, cirazoline, a potent \(\mathbf{I}\) receptor ligand and \(\mathbf{2}\)-adrenoceptor agonist, phenylephrine, an agonist of \(\mathbf{2}\)-adrenoceptor, moxonidine, a ligand of \(\mathbf{2}\) receptor, efaroxan, a ligand of \(\mathbf{I}\) receptor and 5-bromo-6-(imidazoline-2-yl-amino)quinoxaline (UK14304), an agonist of \(\mathbf{2}\)-adrenoceptor. Next, the effects of a series of imidazoline-and/or \(\mathbf{2}\)-adrenoceptor-binding drugs (prazosin, yohimbine, RS79948, RX821002, idazoxan and efaroxan) on the relaxation of the Ach-constricted rat jejunum strips, induced by 2-BFI, cirazoline or phenylephrine, were studied. The obtained results demonstrate the involvement of the postsynaptic imidazoline receptors in rat jejunum motility. These receptors are of \(\mathbf{I}\) subtype and are linked to \(\mathbf{2}\)-adrenoceptors of the predominantly \(\mathbf{2}\) subtype. The \(\mathbf{2}\) receptors dominate functionally over the \(\mathbf{I}\) in the isolated rat jejunum. The proposed model might be useful in search for more specific new drugs.

Key words:
imidazoline receptors, \(\mathbf{2}\)-adrenoceptors, isolated rat jejunum, acetylcholine-induced rat jejunum constriction, ligands of \(\mathbf{I}\), \(\mathbf{2}\) and \(\mathbf{I}\) imidazoline receptors, agonists and antagonists of \(\mathbf{2}\) and \(\mathbf{2}\)-adrenoceptors