Subcapsular arterioles of guinea-pig ileum, analyzed with computer-assisted videomicroscopy, have recently been shown to possess functional muscarinic M2, histaminergic H1, adrenergic (a1, a2) non-specific, and serotonergic 5-HT3 receptors. The aim of this study was to investigate 8-adrenergic-mediated responses in this tissue and to examine in addition a series of antihypertensive drugs for direct vasodilating properties, e.g. the 8a1-adrenergic receptor-blocker (+)-celiprolol, the long-acting diurinary calcium antagonist, and the potassium channel opener lemakalim. The preparations were obtained from young guinea-pigs of both sexes (250-350 g) and consisted of arteriolar trees embedded in a thin connective tissue sheath. This was proceeded on the base of a small organ bath (0.3 ml) and continuously flowed with gassed Tyrode solution at 32 °C. Arteriolar diameter was measured with the Dialfrax®-system (6). Outside diameter of arterioles examined in this study ranged from 40-90 μm. Vessels were preconstricted with either (-)-noradrenaline (10 μM) or the thromboxane-A2-mimetic U-46619 (300-600 nM). The drugs tested were applied in a cumulative fashion; in case of ineffectiveness, the vasodilation induced by the muscarinic agonist carbachol prepared either (1) was used as positive control.

The following results were obtained: lemakalim produced a dose-dependent (glibenclamide-sensitive; data not shown) vasodilation of the preconstricted vessels, whereas indapamide and celiprolol (1-5 mM) were inactive. (+)-Isoprenaline (10-200 μM) produced a further contraction of the U-46619- or noradrenaline-pretreated vessels, which, after a wash-out with propranolol (1 μM) and re-pretreatment with (-)-noradrenaline (10 μM) and the thromboxane-A2-mimetic U-46619 (300-600 nM), the drugs tested were applied in a cumulative fashion; in case of ineffectiveness, the vasodilation induced by the muscarinic agonist carbachol prepared either (1) was used as positive control.

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