PHARMACOLOGICAL EVIDENCE THAT METHYLENE BLUE INHIBITS NORADRENALINE NEURONAL UPTAKE IN THE RAT VAS DEFERENS

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We report that the classical guanylate cyclase inhibitor methylene blue (MB, 1 μM or 10 μM), but not the selective guanylate cyclase inhibitor 1H-[1,2,4]oxidazolo[4,3-a]quinoxalin-1-one (1 μM) or nitric oxide synthase inhibitor, Nω-nitro-L-arginine methyl ester (100 μM), causes a shift to the left in the concentration-response curve for noradrenaline in the isolated rat vas deferens preparations. The main objective of our study was to investigate the pharmacological mechanism by which MB increases the sensitivity of the rat vas deferens to noradrenaline. According to the presented results, MB did not change rat vas deferens sensitivity to methoxamine or noradrenaline in the presence of desipramine (0.1 μM). The pre-contracted rat vas deferens relaxation induced by isoproterenol was also not significantly changed by MB (1 μM). Thus, we suggest that MB increases rat vas deferens sensitivity through neuronal uptake inhibition without interfering in either the nitrergic mechanism or guanylate cyclase activity.

Key words: methylene blue, neuronal uptake, noradrenaline, rat vas deferens, guanylate cyclase

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