

Effects of cholinergic drugs and 4-aminopyridine on cat ciliary muscle contractility

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The effects of some cholinergic agents and 4-aminopyridine (4-AP) on neurally mediated contractions of in vitro cat ciliary muscle preparations were studied. The contractile response to trains of stimuli was enhanced by eserine and completely blocked by tetrodotoxin or atropine. Low concentrations of carbachol did not modify muscle resting tension but clearly attenuated contractile response to electrical stimuli, while higher concentrations increased the resting tonus leading to contracture which did not respond to further stimulation. 4-AP is known to be a potassium-channel blocking drug that increases neurotransmitter release at nerve terminals during the action potential. This substance exhibited a dose-related potentiation of the evoked ciliary muscle contractions without changing resting tension. The eventual reducing effect of 4-AP on the accommodative convergence/accommodation ratio (AC/A) is discussed in relation to its potential clinical application in certain strabismus patient