

Guanethidine effects on the guinea pig vas deferens are antagonized by the blockers of calcium-activated potassium conductance, apamin, methylene blue, and quinine

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The blocking effects of guanethidine on electrically induced, neurally mediated, contractions of the guinea pig vas deferens in vitro could be markedly antagonized by the bee venom polypeptide apamin (20-60 nM), by 0.1 mM methylene blue, and (less regularly) by 0.1-0.15 mM quinine, three substances known to inhibit calcium-activated potassium conductance in a variety of cells.

Guanethidine (20 μ M) was also found to inhibit (by 88%) the release of [³H]norepinephrine induced by electrical stimulation (20-Hz, 2-msec, biphasic pulses of supramaximal voltage). Such inhibition was decreased to 39% when 20 nM apamin was present together with guanethidine, thus showing that the effect of this polypeptide is presynaptic. On the basis of these findings, we suggest that guanethidine may block adrenergic neurons by activating their calcium-activated potassium conductance, presumably by releasing intracellular calcium.