transmitter released during nerve activity is more intensely metabolised in the rabbit saphenous veins, probably because the synaptic cleft is smaller than in the dog veins, (c) at the smooth muscle level the metabolism of the adrenergic transmitter may be different, since in rabbit veins most of the NMN is quickly degraded to MOPEG whereas dog veins produce substantial amounts of intact NMN and VMA, (d) these differences in the metabolism of the adrenergic transmitter cannot be explained in terms of a difference in the density of the adrenergic innervation.

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Effects of clonidine and noradrenaline on the release of [^{3}H]-noradrenaline from the rat anococcygeus

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Rat isolated anococcygeus can accumulate [^{3}H]-noradrenaline ([^{3}H]-NA) in the adrenergic nerve terminals (Nash, Gillespie & Robertson, 1974), and is a suitable preparation for studying mechanisms involved in the release of NA (McGrath & Olverman, 1977).

Individual anococcygii were incubated in Krebs solution containing (±)-7-[^{3}H]-NA (0.5 μM; 5 μCi/ml) and ascorbic acid (20 μg/ml) at 37°C for 30 minutes. At the end of the incubation period, the tissue was washed repeatedly with Krebs solution containing nortriptyline (30 nM) for 90 min and then suspended in a 2.5 ml organ bath between two parallel platinum electrodes and superfused with Krebs solution (0.33 ml/min) containing nortriptyline (30 nM). After 30 min of equilibration, seven sequential 5 ml samples of superfusate (each corresponding to a 15-min period) were collected for total radioactivity count. Electrical field stimulation (1 ms pulses at 10 Hz) was delivered during the fourth collection period and consisted of either short trains (trains of 5 pulses, once every 30 s, for 15 min) or a single long train of 150 pulses. At the end of the experiment, the tissue was solubilized and total radioactivity counted using Intertechnique liquid scintillation spectrometer (ABAC SL 40).

Electrical field stimulation resulted in an increase in the basal efflux of tritium; the increase was calcium dependent and tetrodotoxin-sensitive. Unlabelled NA caused a rise in the basal tritium efflux; the effect was slight with NA (0.1 μM) but massive with NA (10 μM). Stimulation-induced tritium efflux remained unaffected by NA (0.1 μM) but was lost after NA (10 μM). Pretreatment with phentolamine (5 μM) did not antagonize the effects of NA on tritium efflux.

Clonidine (1–10 nM) inhibited the increase in tritium efflux evoked by short trains of electrical stimulation but exerted no effect on the basal efflux itself. Its action was blocked completely by phentolamine (5 μM) which itself potentiated the stimulation-induced tritium efflux. Clonidine was totally ineffective in inhibiting the tritium efflux evoked by long trains of electrical stimulation.

These results confirm the earlier conclusions, obtained indirectly (Idowu & Zar, 1976), that clonidine inhibits the motor transmission in the anococcygeus through presynaptic mechanisms and is effective only at short train-lengths of electrical stimulation.

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