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Adrenergic neuron blocking action of dehydroemetine

In recent years, dehydroemetine appears to have replaced emetine in the treatment of amoebiasis. Dehydroemetine is less toxic than emetine, but like emetine, it produces a fall in blood pressure (see *Extra Pharmacopoeia* 1967). The hypotensive effect of emetine has been ascribed to the interference in the release of noradrenaline at the adrenergic nerve endings (Ng, 1966a; 1966b; Abraham, 1968). It is possible that a similar action may be shared by dehydroemetine.

To investigate the effect of dehydroemetine on adrenergic transmission, observations were made on Finkleman (1930) preparations of the rabbit ileum. Preparations were suspended in 50 ml of McEwen solution maintained at 35° and equilibrated with a gas mixture of 5% carbon dioxide in oxygen. The periaxillary sympathetic nerves were stimulated through a bipolar electrode (Burn & Rand, 1960) with supramaximal shocks (10-20 V) of 0.5 ms at 20 to 50 Hz for 20 to 30 s. The movements of the preparations were recorded on a kymograph by an isotonic lever.

Segments of intestine removed from six rabbits all showed spontaneous pendular movements. They were inhibited by noradrenaline (0.05-0.1 µg/ml) or by electrical stimulation of the perivascular nerves. Hexamethonium (50-100 µg/ml) did not abolish the inhibitory response produced by nerve stimulation. It was therefore concluded that the electrical stimuli were applied to post-ganglionic adrenergic nerves. Addition of dehydroemetine dihydrochloride (2-10 µg/ml) to the organ bath did not affect the spontaneous activity of the rabbit ileum. On the other hand, dehydroemetine initially reduced and subsequently abolished the inhibitory effect of nerve stimulation. When the effect of nerve stimulation was abolished by dehydroemetine, added noradrenaline still inhibited the spontaneous movements of the rabbit ileum.

These results show that dehydroemetine has no blocking action on the direct effect of noradrenaline on the rabbit ileum. Blockade of the inhibitory effects of nerve stimulation suggests that the action of dehydroemetine is on the adrenergic nerve endings. This pharmacological property is therefore qualitatively similar to the adrenergic neuron blocking action of emetine (Ng, 1966a, 1966b; Abraham, 1968).

We wish to thank La Roche & Co. Ltd. for the gift of dehydroemetine dihydrochloride.

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May 16, 1970

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