amine releases noradrenaline bound to the transfer (uptake) sites of the neurone membrane (Ross & Renyi, 1966).

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Reserpine and the neuromuscular junction

Sir,—The ineffectiveness of reserpine on the neuromuscular transmission (Bein, 1956) was questioned by Liebmann & Matthies (1964) who claimed that the drug displayed a powerful anticurare activity by increasing the acetylcholine release from the motor nerve endings. Their results, however, were not confirmed by Ledda & Baldi (1965).

We now summarise investigations made to establish whether reserpine affects both the amount of acetylcholine stores in the motor nerve, and the pattern of the end-plate potentials.

The experiments were made on the isolated phrenic nerve-diaphragms of the guinea-pig and rat; the methods for detecting acetylcholine and for intracellular recordings were those previously described (Beani, Bianchi & Ledda, 1966).

The right and left hemidiaphragms of five guinea-pigs were separately incubated for 2 hr in oxygenated Tyrode solution with dyflos 500 μg/ml, at 38° After washing out the dyflos, the preparations were indirectly stimulated at 50/sec for 10 min. They were then kept at rest for 1 hr and one hemidiaphragm of each pair was maintained in the presence of reserpine 1×10^{-5}M. Immediately after a second period of stimulation at 50/sec (10 min) the tissue acetylcholine was extracted both in the control and treated preparations.

TABLE 1. TOTAL TISSUE ACETYLCHOLINE (NG/HEMIDIAPHRAGM ± S.D.) AT THE END OF THE SECOND PERIOD OF STIMULATION AT 50/SEC IN HEMIDIAPHRAGMS KEPT IN TYRODE SOLUTION, AT 38°, WITH OR WITHOUT RESERPINE 1×10^{-5}M. PREINCUBATION WITH DYFLOS 500 μG/ML FOR 2 HR (each value is the mean of five experiments).

Treatment	Guinea-pig weight g ± s.d.	Hemidiaphragm weight mg ± s.d.	Acetylcholine ng/hemidiaphragm ± s.d.
Controls	330 ± 23	223 ± 33	81·5 ± 11·3
Reserpine	330 ± 23	250 ± 49	76·0 ± 8·0

As shown in Table 1, reserpine does not change the transmitter stores; in similar experimental conditions, the drug does not modify the acetylcholine release (Ledda & Baldi, 1965). The end-plate potentials were recorded from curarised rat diaphragms, kept in oxygenated Tyrode solution at 33°. The phrenic nerve was stimulated at 1, 10 and 100/sec for 10 sec.

TABLE 2. EFFECT OF RESERPINE ON END-PLATE POTENTIAL HEIGHT (mV ± S.D.) OF RAT CURARISED DIAPHRAGMS (TUBOCURARINE 1×10^{-6} G/ML). (Stimulation of phrenic nerve at 1, 10 and 100/sec for 10 sec at 33°.)

Treatment	Stimulation rate		
	1/sec	10/sec	100/sec
Controls (16)*	2·53 ± 0·69	1·39 ± 0·45	0·69 ± 0·34
Reserpine (22) 1×10^{-5}M ..	2·50 ± 0 58	1·44 ± 0·39	0·75 ± 0·22

* No. of end-plates.

Different end-plates were usually impaled both before and 40–50 min after adding reserpine 1×10^{-5}M. In three cases, the potentials of the same end-plate were recorded throughout the experiment. As shown in Table 2, the drug does not affect the end-plate potential amplitude at different stimulation rates. The inactivity of the drug was again confirmed in six non-curarised diaphragms in which the pattern of the frequency of the miniature end-plate potentials and amplitude was followed. The average frequency of the miniature end-plate potential of 14 normal end-plates was 152/min (range 78–240); after reserpine the value was 161/min (range 80–264). Also the average height of the miniature end-plate potentials remained the same (0·80 mV) before and during treatment, without any change in the amplitude distribution. The obvious conclusion is that reserpine has no detectable effect on the transmitter stores nor on the spontaneous and stimulus-triggered end-plate bioelectric events. Moreover, the post-synaptic chemosensitivity seems to be unaltered, as suggested by maintained end-plate potential height. These results strengthen the hypothesis that the change of acetylcholine stores and release observed after reserpine in other tissues, as in the brain (Malhotra & Mehta, 1966), are mediated through the effect of the drug on the physiological dispostion of other biogenic amines (Beani, Ledda, Bianchi & Baldi, 1966).

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