

correctness of this view. Investigations of the effects of lack of these vitamins on the antitoxin production are under way.

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Sensitivity of Isolated Intestine of Athyroid, Normal and Thyroxinized Rabbits to Physostigmine and Adrenalin.

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It is generally accepted that increased thyroid secretion "sensitizes" the autonomic nerves, particularly the sympathetic. Evidence that this is so has been presented by Eppinger, Asher, Oswald, Cannon, Levy,¹ and others. The usual experimental method has been the quantitative determination of the blood pressure change induced by adrenalin, but "acute" experiments with thyroid substance or thyroxin have been generally negative.² The isolated intestine is such a delicate physiological test-agent, responding to both sympathetic and parasympathetic stimuli, that it was thought that investigation of the behavior of such segments in the presence of greater or less amounts of thyroid product might disclose significant differences. "Acute" experiments (*i. e.*, dropping thyroxin in one bath and not in the other of parallel segments) were done some years ago and were uniformly negative.

The plan of the present work was as follows: rabbits were thyroidectomized under local anesthesia without disturbing the parathyroids and about 2 or 3 weeks later their isolated intestinal responses were studied in the usual fashion in a Tyrode bath. During the same period other rabbits were given 2, 3 or more 0.1 mg. doses of thyroxin intravenously, and the sensitivity to autonomic stimulating drugs compared quantitatively with segments from the thyroidectomized and normal animals. Comparisons were always made simultaneously in order to be sure of uniform temperature, oxygen and other environment.* To insure a fair distribution of the drugs administered, a double-chamber bath as shown in Fig. 1

¹ Levy, R. L., *Am. J. Physiol.*, 1916, xli, 492.

² Feldberg and Schilf, *Arch. f. exp. Pharm. u. Path.*, 1927, cxxiv, 94. Herzfeld and Mosler, *Klin. Woch.* (Berlin), 1926, v, 1281.

* Keeping the intestine in a thyroxin solution from the time the animal was killed until observation was begun was tried a few times and made no apparent change in responses.

was used. The recording segments were suspended in chamber A. The drug was run into chamber B through the oxygen tube C and allowed to diffuse throughout this chamber before it was mixed with the fluid in A by gentle blowing through tube D. The whole system was immersed all the while in a constant temperature bath.

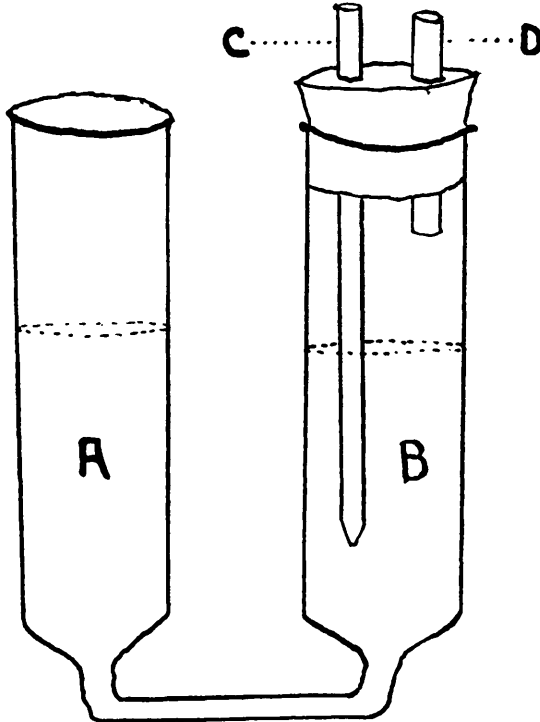


FIG. 1.

Adrenalin. Duodenal segments from normal, athyroid and thyroxinized animals showed no significant or constant difference in their response to this drug (20 experiments), perhaps because, owing to the instability of this substance in the somewhat alkaline Tyrode's solution, it was impossible to obtain simultaneous contact of the same concentration of adrenalin with the two segments.

Physostigmine. In 16 experiments, 12 showed a greater sensitivity in thyroxinized than in athyroid segments, 2 showed less, and 2 were apparently equal in response. In 5 of 6 experiments in which segments from thyroxinized animals were compared with those from normals, the response of the thyroxinized gut was greater than that from the control, while in one it was apparently equal. (Greater sensitivity was manifested by either a response to lower drug concentration or by earlier or markedly greater degree of re-

sponse to the same concentration. A typical result is shown in Fig. 2.)

The indication of sensitization to parasympathetic stimulation may or may not have been accidental in view of the fewer contradicting negatives.

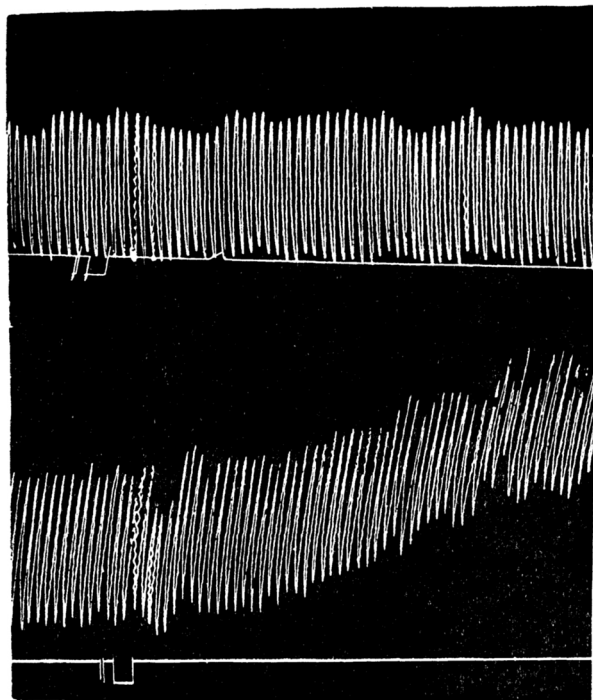


FIG. 2.

Upper curve is tracing from duodenal segment from athyroid, lower from thyroxinized rabbit, suspended in same bath. At signal physostigmine (1:12 million) was brought in contact with both segments.

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A New Dialysis Test for Tissue Thirst.

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Small samples of blood serum from normal and nephritic individuals have been dialyzed against water, normal salt solution, and