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Effect of Thyroidectomy and of Experimental Hyperthyroidism Upon Histamine Content of Rat Tissues.

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Abelin[1] has recently studied the effects of experimental hyperthyroidism upon the chemistry of the skin in rats, with especial reference to cholesterol, chloride, water and fat. So far as we know, no one has determined the effect of experimental hyperthyroidism upon the histamine content of the skin. Such a determination appeared to be of interest for two reasons. It might add circumstantial evidence to the theory that the histamine content of tissue is the result of local metabolic processes rather than a mere storage of histamine that has been absorbed from the intestinal tract. Also it might reveal a possible explanation for the apparent increased incidence of urticaria and dermographism reported in patients with hyperthyroidism.

In order to check the possibility that changes in the skin histamine depended upon a shifting of histamine from skin to viscera or the reverse, the liver and lungs were examined also. In addition it seemed desirable to contrast the effects of an experimental hyperthyroidism with those of an experimental hypothyroidism.

The histamine content of the skin, liver and lung was determined by Best's[2] method in 3 series of rats, a control group, a group that had been thyroidectomized from 16 to 20 days previously, and a group that had received thyroid daily for 8 to 17 days. The thyroid was administered subcutaneously as a matter of convenience and was given in 10 mg doses.

The results are shown in the accompanying table. The observations indicate that thyroidectomy results in a decrease in the histamine content of the skin and conversely that an experimental hyperthyroidism results in an increased content of histamine. There is some indication that similar changes occur in the histamine content of the liver and lung but in these organs the range of values for normal animals is so wide that it would probably take a much larger number of animals to definitely establish this conclusion. It seems fair to conclude, however, that neither the decrease in skin

[1] Abelin, I., *Biochem. J.*, 1940, **34**, 15.

[2] Best, C. H., *J. Physiol.*, 1929, **64**, 256.

histamine resulting from thyroidectomy nor the increase in skin histamine occurring after thyroid administration is due to a shift of histamine from skin to other organs and vice versa. The effect of thyroidectomy and of thyroid administration upon the histamine content of the tissues of other laboratory animals is under investigation.

TABLE I.
Histamine Content of Rat Tissues.

	Tissue	No. of animals	Histamine base in μg per g of tissue	
			Range	Mean
Normal	Skin	10	10.9-16.5	11.5
	Liver	8	>0.2- 2.8	0.8
	Lung	11	3.6-10.9	5.8
Thyroidectomized	Skin	8	2.8- 8.2	4.8
	Liver	9	>0.2- 1.0	0.18
	Lung	9	>0.2-10.7	2.8
Hyperthyroid	Skin	12	10.9-32.9	21.2
	Liver	12	>0.2- 3.0	1.1
	Lung	12	>0.2-12.0	6.4

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Experimental Analysis of Kuo Vaseline Technique for Studying Behavior Development in Chick Embryos.†

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The purpose of this study is to examine the experimental method used by Kuo[1-5] to study development of embryonic behavior in the chick. The conditions under which Kuo's experiments were performed,[1, 2] were as follows.

† Complete data will appear in the final article to be published in *The Journal of Genetic Psychology* in the near future.

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1 Kuo, Z. Y., *J. Exp. Zool.*, 1932, **61**, 395.

2 Kuo, Z. Y., *J. Exp. Zool.*, 1932, **62**, 453.

3 Kuo, Z. Y., *Psych. Rev.*, 1932, **39**, 499.

4 Kuo, Z. Y., *J. Comp. Neurol.*, 1939, **70**, 437.

5 Kuo, Z. Y., *Psych. Rev.*, 1939, **46**, 93.