8579 P

Response of Normal and Hypophysectomized Rhesus Monkeys to Insulin.*

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It has been shown that dogs which are hypophysectomized show an increased sensitivity to insulin (Houssay and Magenta,[1] Geiling *et al.*,[2] Chaikoff *et al.*[3]). This method was used a number of years ago in a monkey to test for the completeness of the pituitary ablation Hartman *et al.*[4]). We have tested the magnitude of the drop of blood sugar in completely and partially hypophysectomized and normal monkeys when insulin was injected after fasting. Since in half an hour after the insulin injection some of the operated animals collapsed the determinations could not be safely carried beyond that interval.

The procedure was as follows: After a 16-hour period of fasting a sample of blood was taken by cardiac puncture. Insulin (1/16 U./kilo) was then injected. Thirty minutes later a second blood sample from the heart was drawn, at which time in the collapsed hypophysectomized monkeys 50% glucose was injected into the heart to prevent death from hypoglycemia. In others 10% glucose was given subcutaneously.

The blood sugar was determined by the Somogyi modification of the Shaffer-Hartman method, reagent No. 1 being used. Each observation reported is the average value from 2 determinations on the same sample.

It will be seen from Table I that hypophysectomized monkeys are very sensitive to insulin injections. The blood sugar values of normal animals decrease by 14% 30 minutes after 1/16 unit per kilo, while the completely hypophysectomized animal shows a blood

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[1] Houssay, B. A., and Magenta, M. A., *Comp. rend. Soc. de Biol.*, 1925, **92**, 822.

[2] Geiling, E. M. K., Campbell, D., and Ishikawa, Y., *J. Pharm. Exp. Therap.*, 1927, **31**, 247.

[3] Chaikoff, I. L., Reichert, F. L., Larson, P. S., and Mathes, M. E., *Am. J. Physiol.*, 1935, **112**, 493.

[4] Hartman, C., Firor, W. M., and Geiling, E. M. K., *Am. J. Physiol.*, 1930, **95**, 662.

TABLE I.
Effect of Injection of 1/16 Units Insulin per Kilo in Monkeys.

Condition animal	No. monkeys	No. samples	Aver. initial mg. %	Aver. mg. % 30 min. after insulin	% decrease
Normal	5	12	115	99	14
Incompleted	3	5	78	66	15
Hypophysectomized	7	11	57	37	35

sugar drop from an average initial value of 57 mg. % to 37 mg. %, a decrease of 35%.

It appears of interest that although the initial level of the blood sugar in the partially hypophysectomized animals was considerably lower than in the normals, nevertheless the percentage drop in blood sugar was nearly identical with that of the normal animals. The 3 partially hypophysectomized animals never went into collapse from the insulin injections whereas the completely hypophysectomized ones often did. In the incomplete hypophysectomies it is estimated that in no case was more than one-fourth of the normal anterior lobe present.

The blood sugar values in 6 cases of hypophysectomized animals in collapse from fasting alone averaged 29 mg. % while in 4 normal and 3 hypophysectomized animals in collapse after insulin injections the average values were approximately the same, 26 mg. %.

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Functional Auto- and Homoplastic Thyroid Grafts in the Rat.*

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Many of the attempts to graft the thyroid gland have met with little success. Manley and Marine,[1] however, reported auto-transplanted thyroids in rabbits which survived with apparently normal structure for 271 days, the animals showing "marked amelioration of symptoms of operative myxedema." Loeb[2] in a series of

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1 Manley, O. T., and Marine, David, PROC. SOC. EXP. BIOL. AND MED., 1915, **12**, 202.

2 Loeb, Leo, *J. Exp. Med.*, 1920, **31**, 765.