

gave consistently lower titers.

The technic used for the preparation of rabies antigen proved unsuitable for the preparation of antigens from brains of animals infected with equine encephalitis virus. It appears that simple desiccation is detrimental to this antigen. Frozen brains dried in a vacuum yielded antigens which reacted with anti-equine encephalitis sera but exhibited marked anti-complementary properties.

The rate of appearance and the titer of neutralizing and complement fixing antibodies respectively, were observed during a period of 4 months in a group of 5 guinea pigs which

had received one course of immunization against rabies. The complement fixing antibodies reached a maximum titer about a week after the last injection, decreased to $\frac{1}{8}$ of the maximum titer after one month and disappeared completely after 4 months. The neutralizing antibodies, however, reached a maximum titer after about one month and did not show a decrease during the subsequent period of observation. The results indicated a lack of correlation of complement fixing with virus neutralizing antibodies in rabies, and are in accord with the findings of Casals and Palacios.

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Effect of Growth Hormone on Glycosuria of Fed Partially Depancreatized Rats.*

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Although it has been well established that the secretions of the anterior pituitary profoundly influence carbohydrate metabolism, it has not been shown as yet which hormone or hormones are involved in this relationship. This problem has recently been comprehensively reviewed by Houssay.¹ Heretofore investigators have used whole pituitary extracts or hormone preparations only partially purified. Recently much progress has been made in the isolation of the anterior pituitary hormones. We have available at present the following hormones in a state which approaches physiological purity: growth, lactogenic, interstitial cell stimulating, and adrenocorticotrophic.

A study is being carried out to determine which of the hormones of the anterior pituitary will produce glycosuria in the partially depancreatized rat. The data presented here have to do only with the effect of

growth hormone upon the glucose excretion of such an animal.

Methods. The test animal used in these experiments is a potentially diabetic male rat in which a partial pancreatectomy had been performed 5 to 6 months previously, when the animal was 4 to 5 weeks of age. The rats were fed a standard diet except for the 24-hour periods in which the glycosuria was measured. During this period, the animals were placed in individual metabolic cages, and given 75 cc of a 20% sucrose solution as their only food and drink. All animals but one operated and one normal drank the total amount. Under these conditions it was found that the partially depancreatized rat excretes from 0.1 to 4.0 g of glucose in 24 hours. The unoperated rat of the same age excretes as a rule less than 0.1 g of glucose during 24 hours.

The growth hormone preparation used was a "cysteine treated globulin fraction," prepared as reported recently,² which had a potency of approximately 23 growth hormone units per milligram (hypophysectomized rat

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¹ Houssay, B. A., *Endocrinology*, 1942, **30**, 884.

² Marx, W., Simpson, M. E., and Evans, H. M., *J. Biol. Chem.*, 1943, **147**, 77.

TABLE I.

Test animals	Total dose growth hormone, mg	Urinary glucose in 24 hours in individual rats		
		Before injection, g	On 3rd day of injection, g	Increase, g
Partially depancreatized rats	15.0	3.74	4.42	0.68
		2.20	4.75	2.55
		1.85	3.35	1.50
		1.69	4.85	3.16
		0.64	4.00	3.36
		0.52	1.30	0.78
		0.33	1.40	1.07
		0.23	0.95	0.72
		0.17	0.28	0.11
		0.12	0.56	0.44
		0.11	0.90	0.79
		0.10	0.75	0.65
		0.06	0.52	0.46
	7.5	2.86	3.10	0.24
		0.18	1.24	1.06
		0.18	0.27	0.09
		0.12	0.09	-0.03
		0.04	0.06	0.02
	1.5	0.70	0.94	0.24
		0.70	0.53	-0.17
		0.10	0.25	0.15
		0.08	0.11	0.03
		0.06	0.09	0.03
Normal rats	15.0	0.14	0.08	-0.06
		0.06	0.08	0.02
		0.03	0.03	0.00
		0.02	0.06	0.04

units). When this preparation was injected into hypophysectomized rats at a total dose of 5.0 mg (4-day test), no stimulation of ovaries or adrenals, and only a trace of thyrotropic activity was detectable. When injected subcutaneously into immature pigeons at a total dose of 10.0 mg (4-day test) no lactogenic hormone was demonstrable.

A control measurement of the glucose excretion per 24 hours was taken a few days before the injections of growth hormone were started. The hormone was given once daily for 3 days at levels varying from 1.5 to 15.0 mg total dose. During the last 24 hours of the 3-day injection period the glucose excretion was again measured.

Results. The glucose excretion before and after growth hormone administration is re-

ported in columns 3 and 4 of Table I. A striking increase in the amount of glucose excreted occurred in most of the rats after injection with growth hormone (column 5). There was no uniformity in the amount of glycosuria before injection, nor in the response of the rats to a given dose of growth hormone. This is interpreted as being due chiefly to the fact that the amount of pancreatic tissue removed at operation varied considerably.

Conclusion. It has been shown that a purified growth hormone preparation of the anterior pituitary which is practically free of lactogenic, adrenocorticotrophic, thyrotrophic, and gonadotrophic hormones, produces a marked increase in glucose excretion in the sucrose-fed partially depancreatized rat.