

tion of the "capsular" antigen gave the best results in complement fixation tests. Direct comparison is impossible because of the differences in antigens and technics, but it would appear that tests carried out in this laboratory using serum dilutions of 1:5 to 1:20 and antigen dilutions of 1:10 (1:60 dilution of pus) and 1:20 (1:120 dilution of pus) gave even more sensitive antigen-antibody reactions.

Additional evidence of the sensitivity of the pus antigen is offered by the following incident. A blood specimen, sent to our laboratory, carried the request for a complement fixation test for "granuloma inguinale." Even though it was believed that a mistake had been made and that the intention was to request an examination for "lymphogranuloma inguinale" (venereum), the serum

was tested with the Donovan body antigen. The serum gave a 4+ reaction in a dilution of 1:20. Inquiry revealed that the patient had a perianal ulcerative lesion. A request was made for smears from this lesion, and abundant Donovan bodies were demonstrated. In this instance the patient gave a typical clinical picture of lymphogranuloma venereum with bilateral inguinal buboes and a positive Frei test; the granuloma inguinale had not been recognized.

Conclusion. An antigen prepared from pus aspirated from a metastatic abscess containing Donovan bodies yielded highly sensitive and specific serological evidence of granuloma inguinale when used in complement fixation tests. Twenty-one (84%) of 25 patients with established granuloma inguinale (positive smears) gave positive reactions.

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Enhancement of Diabetes Produced by Adrenocorticotrophic Hormone in Rats Maintained on a Carbohydrate Free Diet.*

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Introduction and Methods. It has been reported by Ingle, Li and Evans¹ that pure adrenocorticotrophic hormone produces glycosuria and increases nitrogen excretion in normal rats forced fed a high carbohydrate diet. Subsequent work from this laboratory has shown that adrenocorticotrophic hormone enhances the glycosuria and nitrogen excretion of diabetic rats maintained on a diet containing approximately 52% preformed carbohydrate. It should be noted that the

amount of glucose in the urine in the above experiments was less than the ingested preformed carbohydrate, so that gluconeogenesis did not have to be invoked to account for the glycosuria. It therefore seemed that a more severe test of the diabetes-enhancing activity of adrenocorticotrophic hormone would be furnished by a study of its metabolic effects in diabetic rats maintained on a carbohydrate-free diet. Under such conditions glycosuria could only be accounted for by gluconeogenesis.

In these experiments rats with alloxan-diabetes were used and the methods and

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¹ Ingle, Dwight J., Choh Hao Li, and Evans, Herbert M., *Endocrinology*, 1946, **39**, 32.

² Bennett, Leslie L., and Choh Hao Li, in press.

TABLE I.
Effect of 3 mg of Adrenocorticotropic Hormone per Day on Daily Glycosuria and Nitrogen Excretion of Diabetic Rats Maintained on a Carbohydrate-Free Diet.

Rat No.	G of diet per day	First control period				Hormone injection period				Second control period			
		Mg urinary glucose per day	Mg urinary N, per day	D/N	Gain or loss of wt	Mg urinary glucose per day	Mg urinary N, per day	D/N	Gain or loss of wt	Mg urinary glucose per day	Mg urinary N, per day	D/N	Gain or loss of wt
G5439	10	1150±170* (12)†	678±15	1.70	+	1810±130 (5)	742±13	2.44	—	400±90 (5)	634±31	.63	+
B5044	10	3090±70 (12)	901±10	3.43	—	3170±130 (5)	929±20	3.42	—	2840±140 (5)	881±25	3.23	+
G5031	8	2060±70 (15)	715±6	2.88	—	2420±120 (5)	769±15	3.15	—	1640±70 (5)	604±24	2.82	+
W5037	8	710±90 (12)	718±9	.99	0	1650±260 (5)	771±23	2.14	—	280±80 (5)	673±25	.42	+
W5090	12	2530±70 (15)	1010±9	2.51	+	3210±260 (5)	1090±20	2.94	—	3090±70 (5)	1037±13	2.98	+
		<.01	<.01										

* Standard deviation.

† Number of days observation.

‡ From Fisher's table of t.

technics were those previously described,² the sole exception being that the diet consisted of casein 70½%, crisco 24%, salts 4%, water soluble vitamin mixture 1%, and liver powder ½%. Fat soluble vitamins were administered once a week and a constant amount of diet was fed daily throughout the whole experimental period. Three mg of adrenocorticotropic hormone was administered per day.

Results. In Table I are presented the data from the experiment. It will be noted that all animals exhibited a pronounced glycosuria prior to injection and that the D/N ratios varied from 0.99 to 3.43. It also is apparent that in all experiments the mean glycosuria and nitrogen excretion was greater during the hormone injection period than during either the pre- or the postinjection control periods. In 4 of the 5 experiments the increases in glycosuria and nitrogen excretion were statistically significant. In the one case, rat B5044, in which the change was not significant, the initial severity of the diabetes was almost maximal as judged by the degree of glycosuria and the D/N ratio of 3.43. All of the animals lost weight during the hormone treatment period while they all gained during at least one of the control periods.

Comment. Although conclusions based upon D/N ratios are open to doubt it may be pointed out that the classical interpretation of the D/N ratios in these experiments would not require the assumption of gluconeogenesis from fat since the D/N ratios never exceeded 3.65. The increase in urinary nitrogen was inadequate to account for the extra urinary glucose as having been derived solely from this additional protein being broken down. These observations would imply that not only is adrenocorticotropic hormone concerned with carbohydrate metabolism by increasing gluconeogenesis from protein but also by depressing carbohydrate utilization.

Summary. Pure adrenocorticotropic hormone enhances both the glycosuria and the nitrogen excretion of diabetic rats maintained on a carbohydrate-free diet.