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Diabetogenic Effect of Some Cortin-Like Compounds.

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Studies by Long and his coworkers¹ demonstrated the diabetogenic effect of some of the steroid compounds occurring in the adrenal cortex. The effect of 11-desoxy-corticosterone acetate was found to be slight compared to that of corticosterone and 11-dehydro-corticosterone. Jensen and Grattan² have reported that 11-desoxy-corticosterone acetate is much less effective in preventing insulin convulsions in mice than are corticosterone and 11-dehydro-corticosterone.

In the following experiments partially depancreatized³ male rats having a body weight of approximately 280 g were used. The food intake of each animal was kept constant by administering the food

TABLE I.
Effect of Some Cortin-like Compounds on the Glycosuria of Partially Depancreatized Rats.

Substance	Daily dose, mg	Rat No.	Glycosuria g/day*		
			Before inj.	During inj.	Following inj.
11-desoxy-corticosterone acetate	1	7	0	0	0
	2	3	0	0	0
	2	3	0	0	0
	5	3	0	0	0
	5	5	1.75	1.75	1.11
	10	5	1.11	2.12	0.83
	5	8	1.00	3.80	1.78
17-hydroxy-11-dehydro-corticosterone acetate	10	7	0.95	1.17	0.90
	1	8	1.78	3.70	†
	2	2	2.63	4.20	†
	2	3	0	2.12	0
	2	11	0	4.7	†
17-hydroxy-corticosterone	5	3	0	5.50	0
	2	7	0.90	5.80	†

*The highest single value for daily excretion occurring prior to injection; the highest value for the response elicited by the injection; and the highest value following the injection period are given here.

†These experiments were terminated by the development of a severe ketonuria. Rats 2, 7, and 11 succumbed. Rat 8 was treated with insulin and recovered.

¹ Long, C. N. H., Katzin, B., and Fry, E., *Endocrinology*, 1940, **26**, 309.

² Jensen, H., and Grattan, J. F., *Am. J. Physiol.*, 1940, **128**, 270.

³ Shapiro, R., and Pincus, G., *Proc. Soc. Exp. Biol. and Med.*, 1936, **34**, 416.

by stomach tube in the manner described by Reinecke, Ball and Samuels.⁴ The test substances were dissolved in sesame oil and administered by subcutaneous injection twice daily. Each series of injections was continued for 4 days. The results are summarized in Table I.

The compound 17-hydroxy-11-dehydro-corticosterone appears to be more potent than 11-desoxy-corticosterone in its diabetogenic effect. In the one test of 17-hydroxy-corticosterone the increase in the glycosuria was very marked, indicating that this substance is also very active. Jensen and Grattan⁵ have observed that the anti-insulin effect of 17-hydroxy-11-dehydro-corticosterone and 17-hydroxy-corticosterone is greater than the anti-insulin effect of 11-desoxy-corticosterone.

The relative effects of the cortin-like compounds on carbohydrate metabolism parallel very closely their effects upon the capacity of adrenalectomized rats to work⁶ but differ from their relative maintenance activity.

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⁴ Reinecke, R. M., Ball, H. A., and Samuels, L. T., *PROC. SOC. EXP. BIOL. AND MED.*, 1939, **41**, 44.

⁵ Jensen, H., and Grattan, J. F., personal communication.

⁶ Ingle, D. J., *Endocrinology*, in press.