a period of a week. The results were compared to those previously obtained in 14 patients receiving only DCA,[2] two of whom being included in the present series after repeatedly demonstrating a prompt rise in blood pressure in association with this steroid given alone.

Results. The combination of DCA and ACE generally produced increases in weight, hemodilution, reductions in urinary volume, and sodium and chloride retention. These changes were similar to those observed after DCA alone. No consistent alterations in serum sodium or chloride values were noted, but reductions in serum potassium levels were again evident in the majority (Table I). In no instance was fever, leucocytosis, eosinophilia or rise in erythrocyte sedimentation rate produced by these agents. In all patients there were either minimal changes in "resting" blood pressure or an actual decline (Fig. 1).

Conclusions. In patients with hypertensive vascular disease, the simultaneous administration of an adrenal cortical extract appears to block the pressor effect of desoxycorticosterone acetate when used alone.

Received May 16, 1949. P.S.E.B.M., 1949, **71**.

17219. Effect of 11-Desoxycorticosterone Acetate upon Carbohydrate Utilization by the Depancreatized Rat.*

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In recent years it generally has been thought that only those steroids of the adrenal cortex which have an oxygen atom at the 11 position in ring C can directly influence carbohydrate metabolism. In particular, the synthetic compound 11-desoxycorticosterone, which has not even been demonstrated with certainty to occur in the gland and which is exceedingly potent in causing sodium retention, has been considered to have no carbohydrate action. However, Verzar and his co-workers have demonstrated[1] that this steroid may reduce glycogen synthesis in isolated diaphragm muscle and may prevent the increased glycogen formation produced in this tissue by insulin. Using glucose labeled with carbon 14, this observation has been confirmed and extended in this laboratory.[2]

Ingle[3] recently has found that in rats made diabetic by partial pancreatectomy, 11-desoxycorticosterone acetate caused a slight decrease in the level of urinary glucose when given in small doses, while large doses of the steroid led to a marked exacerbation of the glycosuria.

Our experiments were carried out in an attempt to find out if desoxycorticosterone would oppose the action of insulin in the diabetic organism.

Methods. Male albino rats of the Slonaker strain[4] were depancreatized at 6 weeks of age in the usual manner.[5] The rats were maintained on Purina Chow until 1 week before the start of the experiment at which time they were fed the following rather high carbohydrate diet: Sucrose 50, casein 18, yeast 10, salt mixture 4, C.L.O. 4, lard 14. After their diabetes was stabilized on this above diet, the animals were placed in individual metabolism cages. The rats were weighed and their food intake determined daily. The urine was

* This investigation was supported by a research grant from the Division of Grants and Fellowships of the National Institutes of Health, U. S. Public Health Service.

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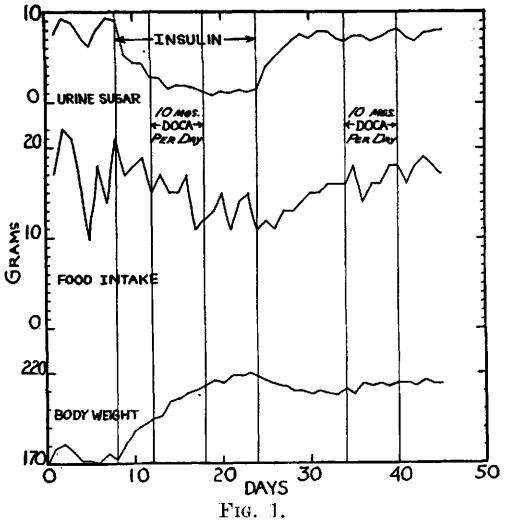

FIG. 1.

Effect of insulin and DOCA on food intake, urine sugar and body weight in depancreatized rats.

collected with a preservative in 24 hour samples and sugar excretion determined by the Shaffer-Somogyi method.[6] Protamine zinc insulin† was administered in doses of 1 unit 2 times daily. Desoxycorticosterone acetate (DOCA)‡ was made up in oil at a concentration of 10 mg per ml. It was given by subcutaneous injection in divided doses each morning and late afternoon. Food was given *ad libitum*.

Results. Fig. 1 presents the significant data as averages for 6 rats. The figures for the individual rats show no important differences from the averages. As usual insulin decreased the food intake and increased the weight gain by reducing the glycosuria. The desoxycorticosterone acetate in a dose of 10 mg per rat per day for 6 days had no influence upon the action of insulin. The DOCA also had no influence when given in the same dose without insulin during an intense diabetes.

Discussion. At first glance our results appear to be at variance with those reported by Ingle.[3] This investigator's rats had a milder diabetes than ours and were force fed with a constant food intake. In our experiments the food intake varied with the desire of the animals. Had the food intake been fixed at the high pre-insulin level during the period of insulin administration, the DOCA administration might have opposed the insulin action, which was largely one of storing sugar.[5] It does seem odd that when no insulin was being given, DOCA in large doses failed to affect the glycosuria. This difference from Ingle's results may be due to the greater severity of the diabetes in our rats which may have been so severe that an exacerbation was not possible.

Summary. Severely diabetic depancreatized male rats reacted as usual to protamine zinc insulin administration by reducing their food intake but gaining weight through a reduction in the glycosuria. Desoxycorticosterone acetate in large doses was without measurable influence on the body weight gain or glycosuria. The glycosuria of the severely diabetic rat without insulin therapy and receiving food *ad libitum* was unaffected by similar doses of desoxycorticosterone acetate.

Received June 9, 1949. P.S.E.B.M., 1949, **71**.

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† We are indebted to Dr. F. B. Peck of the Lilly Research Laboratories for a supply of insulin.

‡ Dr. Edward Henderson of the Schering Corporation supplied the desoxycorticosterone acetate ("Cortate") in oil which was used.