plus acquired resistance. This possibility will be illustrated in detail in a forthcoming publication.

These results indicate that the character of the dose-response curves obtained with these viruses is determined, not by chance presence or absence of virus particles in inocula, but by variations in host resistance.

11205

Lack of Demonstrable Androgenic Activity of Desoxycorticosterone Acetate.*

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Crystalline desoxycorticosterone has been isolated from the adrenal cortex.[1] Manifold biological activities have been attributed to this substance. It has a potent cortinomimetic activity[2] and has been shown to be a fairly effective progestational substance.[2-5] Salmon[6] has stated that it has an estrogenic effect on the human vagina. Robson[4] has reported that desoxycorticosterone will directly antagonize and nullify the effects of simultaneously administered estrogen on the vagina of the castrate mouse. These last two observations are contradictory and could only be reconciled by the assumption that there is a marked difference between the human and the mouse in their reactions to this compound.

The present authors have offered direct evidence that the adrenals of immature castrate male rats, 26 to 31 days of age, are capable of producing an androgenic substance.[7, 8] In this paper it was noted that adrenosterone[9] and progesterone[10] had been isolated from the

* Supported in part by a grant from the Josiah Macy, Jr., Foundation.

1 Reichstein, T., and Euer, J. V., *Helv. chim. acta*, 1938, **21**, 1197.

2 Meischer, K., Fischer, H. W., and Tschopp, E., *Nature*, 1938, **142**, 435.

3 Wells, J. A., and Greene, R. R., *Proc. Am. Phys. Soc.*, 1939, p. 236.

4 Robson, J. M., *J. Physiol.*, 1939, **96**, 1.

5 Van Heuverswyn, J., Collins, V. J., Williams, W. L., and Gardner, W. U., PROC. SOC. EXP. BIOL. AND MED., 1939, **41**, 552.

6 Salmon, U. J., PROC. SOC. EXP. BIOL. AND MED., 1939, **41**, 515.

7 Burrill, M. W., and Greene, R. R., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 327.

8 Burrill, M. W., and Greene, R. R., *Endocrinology*, in press.

9 Reichstein, T., *Helv. chim. acta*, 1936, **19**, 223.

10 Beall, O., and Reichstein, T., *Nature*, 1938, **142**, 479.

adrenal, and that both were androgenic.[9, 11, 12] It was also suggested that because of the chemical similarity between progesterone and desoxycorticosterone the latter might also prove to be androgenic. (See also Hamilton and Golden.[13]) However, the following evidence shows that the foregoing speculation was erroneous.

Procedure. Fifteen male rats 31 days of age were castrated. Eight of these served as untreated castrate controls. The other 7 were given desoxycorticosterone acetate† subcutaneously in oil in daily doses varying from 1.0 to 2.5 mg. Treatment was administered for 8 days. The total doses varied from 8.0 to 20.0 mg. All animals were killed on the day following the last treatment, at 39 days of age. Ventral prostates were removed, fixed in Bouin's fluid and prepared for histological study. All the prostates, both from treated and control animals, showed castration atrophy with no evidence of androgenic stimulation.

Insufficient dosage per gram of animal was considered as a possible reason for the negative results obtained in the above experiment. It was therefore decided to use younger animals. The ventral prostate of the younger animal, however, may remain in the functional state for a limited period after castration (up to 31 days of age). It has been demonstrated, however, that if the animal is adrenalectomized as well as castrated, atrophy of the ventral prostate immediately ensues.[7, 8] Accordingly 15 males, 20 or 21 days old, were adrenalectomized and castrated. Six were treated with desoxycorticosterone acetate. All animals were killed on the 6th day after operation. At autopsy the ventral prostates were removed and prepared for histological study. At this time a careful search was made for adrenal tissue. Three of the untreated animals were "slips" as judged by their daily weight gains and the recovery of adrenal tissue at autopsy. One untreated animal died on the 4th post-operative day. These animals are not included in the results.

In accordance with our previous observations, the 5 untreated adrenalectomized castrates showed complete prostatic atrophy. Four animals were given 4.0 mg of desoxycorticosterone acetate daily subcutaneously in oil (total dose of 20.0 mg). The prostates of these animals also showed castration atrophy. Because of the low solubility of this substance in oil, it was impossible to give higher doses with this solvent to this sized rat. The substance is more soluble in

11 Lamar, J. K., *Anat. Rec.*, 1937, **70**, Suppl. p. 45.

12 Greene, R. R., Burrill, M. W., and Ivy, A. C., *Endocrinology*, 1939, **24**, 351.

13 Hamilton, J. B., and Golden, W. R. C., *Endocrinology*, 1939, **25**, 737.

† The desoxycorticosterone acetate used in these experiments was kindly furnished by Ciba Pharmaceutical Products, Inc.

propylene glycol which was the vehicle used to administer daily doses of 10.0 mg (total dose 50.0 mg) to 2 other animals. The prostates of these animals were also completely atrophic.

In none of the 13 animals treated with 1.0 to 10.0 mg of desoxycorticosterone acetate daily was there any evidence of androgenic stimulation. The histological test used is based on the fact that androgens prevent regression of the ventral prostate after castration. This is the most sensitive of mammalian tests for androgenicity.[14] Therefore, we feel justified in concluding that desoxycorticosterone acetate is not androgenic in the rat.

11206 P

A Surgical Experiment in Changing the Refraction of the Eye.

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The eye has been shortened surgically. There has been no attempt to lengthen it by surgical means. Mueller[1] reported a complicated operation for shortening the axis, by first performing a Kroenlein and then removing an eliptical segment of sclera from the exposed temporal side, 20 mm long and 8 mm to 10 mm wide, placing 5 scleral sutures and then puncturing the choroid before tying them to avoid injury. The object was the cure of detached retina, on the assumption of disproportion of the shrinking retina and the ocular shell. Recently, Lindner[2] proposed cutting the superior rectus muscle, excising an eliptical piece of sclera, the long axis equatorially, stitching the scleral wound so as to avoid injuring the choroid and sewing the severed muscle and conjunctiva back in place; later, doing the same thing below, and in turn, the two sides. In other words, 4 stages. Barkan[3] recently exhibited a moving picture of an operation where a strip of sclera was removed equatorially, after first severing the 4 recti muscles. This operation, most formidable, required over 4 hours to perform.

The method I am presenting is based on the principle that if a body with a given content, is shortened equatorially, it must expand

[14] Moore, C. R., Price, D., and Gallagher, T. F., *Am. J. Anat.*, 1930, **45**, 71.

[1] Mueller, L., *Beitrage zur Augenheilk.*, May-June, 1903, 459.

[2] Lindner, K., *Z. f. Augenheilk.*, 1933, **81**, 277.

[3] Barkan, H., moving picture shown at St. Louis University School of Medicine, October, 1939.