10741 P

The Progesterone-Like Activity of Desoxycorticosterone.*

J. VAN HEUVERSWYN,† V. J. COLLINS, W. L. WILLIAMS AND W. U. GARDNER.

From the Department of Anatomy, Yale University School of Medicine.

The structure of many chemicals obtained from the adrenal cortex has been determined. The similarity of certain of these substances to progesterone has been noted. One of the more interesting chemicals, desoxycorticosterone was recently obtained from the adrenal[1] after having been previously prepared synthetically.

The experiments reported here demonstrate the progestational activity of desoxycorticosterone and the oestrous receptivity response[2, 3] in the guinea pig which has previously been considered specific for progesterone.[4]

Immature female rabbits and young adult spayed guinea pigs were used. The rabbits were given daily injections of 8.33 or 25 gamma of estradiol benzoate‡ for six days and the various amounts of desoxycorticosterone§ over a period of 6 days (Table I). Two rabbits received the estradiol benzoate alone and two received 1 mg and 0.5 mg progesterone following the estrogen. At biopsy sections of the uterine horns were removed, sectioned and rated as to the extent of progestational proliferation as previously described.[5, 6]

Six to 10 mg of desoxycorticosterone gave a progestational response approximately equivalent to 1 mg of progesterone (+++ to ++++) and the uteri of the rabbits receiving 3 mg of desoxycorticosterone resembled those of animals receiving 0.5 mg proges-

* This investigation has been supported by the Belgian American Educational Foundation, the Anna Fuller Fund, and the Jane Coffin Childs Memorial Fund.

† Belgian American Educational Foundation Graduate Fellow.

1 Reichstein, T., and v. Euw, J., *Helv. Chim. Act.*, 1938, **21**, 1197.

2 Dempsey, E. W., Hertz, R., and Young, W. C., *Am. J. Physiol.*, 1936, **116**, 201.

3 Collins, V. J., Boling, J. L., Dempsey, E. W., and Young, W. C., *Endocrinology*, 1938, **23**, 188.

4 Hertz, R., Myer, R. K., and Spielman, M. A., *Endocrinology*, 1937, **21**, 533.

‡ The estradiol benzoate (progynon B) and progesterone (Proluton) were generously supplied by Drs. E. Schwenk and M. Gilbert of the Schering Corporation.

§ The desoxycorticosterone was furnished through the courtesy of Dr. E. Oppenheimer by the Ciba Pharmaceutical Products, Inc.

5 Allen, W. M., *Am. J. Physiol.*, 1930, **92**, 612.

6 McPhail, M. K., *J. Physiol.*, 1934, **88**, 145.

TABLE I.
Uterine Responses of Immature Female Rabbits Receiving 6 Daily Doses of Estrogen Followed by 6 Daily Doses of Desoxycorticosterone.

No. of tests	Daily amt estrogen (gamma)	Total dosage of desoxycorticosterone (mg)	Proliferation rating
1	8.3	30	++
2	8.3	10	++ and +++
1	25.0	10	+++
1	8.3	6	++
1	25.0	6	++++
2	8.3	3	+ to ++
2	25.0	3	+ to ++
1	8.3	0.6	0

terone (+ to ++). Other studies have indicated the progesterone-like activity of desoxycorticosterone.[7, 8]

In studying the effect of desoxycorticosterone on the estrous response of guinea pigs the animals were, as a preliminary procedure, conditioned by injections of 50 I.U. of estrone and 24 hours later were injected with 0.5-2.0 mg of desoxycorticosterone dissolved in corn oil. Oestrous responses were elicited in at least one animal from each dose group thus showing that the substance had definite progesterone-like activity. Ten animals were then injected with 1 mg of desoxycorticosterone 24 hours after a conditioning dose of 50 I.U. of estrone and 60% of the animals so treated gave the heat response. When this percentage is referred to the dose-response curve of progesterone it is found that 1 mg of desoxycorticosterone is approximately equivalent to 0.1 mg of progesterone[3] and it may be concluded that this cortical hormone as measured by this reaction has at least one-tenth the potency of progesterone (Table II).

TABLE II.
Effect of 1.0 mg of Desoxycorticosterone Dissolved in ½ cc of Corn Oil in Causing Heat in Spayed Guinea Pigs When Injected 24 Hours After a Conditioning Dose of 50 I.U. of Theelin.

No. of animals injected	No. in heat	Mean latent period	Mean length of heat	Combined latent and length
10	6	7.3 hr	3.6 hr	10.9 hr

It is to be noted that the latent period or interval between injection of desoxycorticosterone and the elicitation of the heat response was 7.3 hours which is somewhat long when compared with 4.5 hours for progesterone; also the length of heat, 3.6 hours, is short when compared with 6.59 hours for progesterone. However, the

7 Miescher, K., Fischer, W. H., and Tschopp, E., *Nature*, 1938, **142**, 435.
8 Wells, J. A., and Greene, R. R., *Proc. Am. Physiol. Soc.*, 1939, 236.

combined latent period and length of heat for the 2 substances agrees quite closely: for progesterone it is 11.09 hours; for desoxycorticosterone it is 10.90 hours.

Summary. Desoxycorticosterone resembles progesterone in that it produces progestational proliferation in the endometrium of immature rabbits and induction of the oestrous receptivity response in spayed guinea pigs. The above experiments indicate that desoxycorticosterone is from 1/6 to 1/10 as potent as progesterone.

10742 P

A New and Effective Method of Treating Canary-Pox.

REGINALD D. MANWELL* AND FREDERICK GOLDSTEIN.

From the Department of Zoology, Syracuse University.

Canary-pox is a variety of fowl-pox, and is capable of causing very severe loss to those who raise canaries or other small birds. Fowl-pox inflicts considerable losses on poultrymen each year, both because of the deaths it causes and the reduction in egg-laying by affected birds. Up to the present there has been no effective treatment for any variety of the disease, although temporary immunization of chickens is possible.

In canaries the pox is highly fatal, the mortality being almost 100%, and also highly contagious. The disease occurs in 2 or possibly 3 forms. In one the earliest indication is a small swelling of the marginal epithelium about the eyes. This rapidly increases in size until within 3 or 4 days the eye is completely closed, and then continues to spread until death occurs which is usually within a week or 10 days. Or a similar nodule may appear about the nostrils, or at the angles of the mouth, and run a rather similar course.

In other canaries the first indication of the disease appears when the bird begins to gasp, and here the fatal outcome of the infection is often even more prompt. Occasionally birds are also seen with scaly or warty growths about the toes and legs, but although this is said to be a manifestation of the same disease, and is frequently associated with epidemics in which cases of the two first-mentioned types are numerous, it runs a much slower course. But here, too, the bird eventually dies, though not perhaps for some weeks or months. In the meantime the claws and even the toes are frequently lost, and the

* Aided in part by a grant-in-aid from the American Philosophical Society.