Pacific Coast Section

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7989 P

Effect of Pregnant Mare's Serum on the Immature Fowl.

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Precocious development of immature male fowl has been induced by injection of extracts from the anterior lobe of the pituitary[1, 2] and by pregnant mare's serum.[3] Less marked response of the ovary, oviduct and head furnishings to extracts of the anterior pituitary has been obtained in the immature female fowl[1] while oestrin induces precocious development of the oviduct only.[4] In the immature pigeon both the testes and ovary responded to injections of pregnant mare's serum, the increase in the weight of the ovary being less than that of the testes.[5] The effect of pregnant mare's serum on the immature female fowl has not been reported.

For the experiments here reported pregnant mare's serum containing 50 rat units per cc. (obtained from Dr. H. H. Cole) and oestrin containing 1,000 rat units per cc. prepared by the method of Leonard, Hisaw and Fevold[6] from pregnant mare's urine, were used. The birds were injected daily for the duration of the experimental periods.

In a series of experiments immature white Leghorn males were injected with pregnant mare's serum. The results confirm those of Hamburger[3] for short periods of injection, the size of the testes

1 Domm, L. V., and Van Dyke, H. B., PROC. SOC. EXP. BIOL. AND MED., 1932, **30**, 349, 351.

2 Shockaert, J. A., *Am. J. Physiol.*, 1933, **105**, 497.

3 Hamburger, Chr., *Endokrinol.*, 1934, **13**, 305.

4 Juhn, M., and Gustavson, R. G., *J. Exp. Zool.*, 1930, **56**, 31.

5 Evans, H. M., and Simpson, M. E., *Anat. Rec.*, 1934, **60**, 405.

6 Leonard, S. L., Hisaw, F. L., and Fevold, H. L., *J. Am. Chem. Soc.*, 1932, **14**, 254.

being increased as much as 6 times, and the comb being much enlarged. In a preliminary experiment 2 birds injected with 4 cc. (200 rat units) of mare's serum daily from 42 to 91 days of age were found to have smaller testes than the control. One of these mated repeatedly with bantam hens but no fertile eggs were obtained. This agrees with histological examination of the testes since, although the tubules and the interstitial tissue were much enlarged, in no case were spermatozoa present. Short periods of injection of pregnant mare's serum have also been found to increase the size of the testes of immature 128-day-old Bronze turkey males (left testis; injected 1411 mg.; control 198 mg.).

The results with immature white Leghorn females are shown in Table I. In each case the weight of the ovary increased as a result of injecting the pregnant mare's serum but no ripe follicles were produced even after prolonged injection. The oviduct was much enlarged in every case. Injection of oestrin, if it had any effect, reduced slightly the weight of the ovary but increased the size of the oviduct. Where both pregnant mare's serum and oestrin were injected, the oviduct was larger than when oestrin alone was injected. The vagina ended blindly in all of these birds except Nos. 24 and 25. The vagina does not ordinarily open in Leghorns until the birds are somewhat older than this or at about 135 to 150 days according to Palmer.[7]

TABLE I.
Effect of Pregnant Mare's Serum and Oestrin on Immature Female Fowl.

Bird No.	Age killed in days	Wt. when killed gm.	Amt. injected daily: Pregnant mare's serum rat units	Amt. injected daily: Oestrin rat units	Injection Days	Wt. ovary mg.	Length oviduct mm.	Size comb mm.
1	63	408	0	0	—	198	80	small
2	63	568	150	0	42	509	360	70x32
11	117	1243	0	0	—	280	105	32x15
12	117	1120	250	0	10	448	300	60x31
20	99	1025	0	0	—	275	100	35x19
21	99	950	0	1000	10	243	270	38x14
22	99	965	250	1000	10	536	400	45x25
23	115	1164	0	0	—	452	90	35x20
24	115	1280	0	1000	26	425	340	35x15
25	115	1188	250	1000	26	643	490	43x23

The injection of oestrin had no effect on the comb. On the other hand, pregnant mare's serum increased the size of the comb in every case. The comb did not, however, become turgid and erect like that of injected immature males but tended to lop over like that of nor-

[7] Palmer, V. E., unpublished data, Univ. of B. C., 1932.

mal Leghorn females. The effect on the comb is, therefore, apparently different from the effect of injecting Hebin which induces the development of a comb similar to that of the male.[8] It is also of interest to note that while No. 1 had the pale earlobe characteristic of birds of this age and breed, No. 2 had the large, enamel white earlobe characteristic of mature Leghorn females.

The results of these experiments show that pregnant mare's serum induces precocious sexual development up to a certain point. There is a marked increase in the size of the testes and a smaller, but definite increase in the size of the ovary. While the evidence is not complete there is some indication that neither spermatogenesis nor ovulation can be induced in immature birds by the injection of pregnant mare's serum. The oviduct in the female is much enlarged and the head furnishings approximate those of mature birds but are typical of the sex of the birds, whether male or female.

7990 P

Effects of Tartar Emetic on the Leukocyte Count.

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When tartar emetic is inoculated into rabbits it produces a leukopenia, without secondary leukocytosis, and without affecting the erythrocyte count.[1, 2] Because of this property it was considered advisable to study the possible action of this drug on various types of leukocytoses occurring in man. For this purpose a freshly prepared 1% solution of potassium antimonyl tartrate in sterile distilled water was administered intravenously, in progressively graded doses of 2, 3 and 5 cc. on alternate days.

Antimony is irritating when inoculated directly into tissue. When given intravenously, care must be exercised not to allow any of it to seep out of the veins. In certain cases it was noted that the patients complained of slight nausea during the inoculation; others experienced a sensation of warmth associated with blushing, particularly of the face.

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[8] Domm, L. V., *Anat. Rec.*, 1934, **60**, supplement p. 50.

[1] Lucia, S. P., and Brown, J. W., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 426.

[2] Lucia, S. P., and Brown, J. W., *J. Pharm. and Exp. Therap.*, 1934, **52**, 418.