Augmentation of Rat Ovarian Weight Induced by Chorionic Hormone.* (19672)

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The preliminary administration of either estrogenic hormone(1,2) or testosterone(3) to immature female rats results in an augmentation of the ovarian weight induced by the chorionic hormone. In the present study a number of drugs and endocrine substances were investigated for possible similar "augmentation" properties.

The rats employed were of the Sprague-Dawley strain, and were 21 days of age at the beginning of each experiment. On day 1 3 subcutaneous injections of the material under investigation were given, and on day 2 3 injections of 0.25 cc (250 I.U.) of chorionic hormone (A.P.L.-Ayerst) were administered intraperitoneally. The rats were sacrificed on day 6 when body, uterine and ovarian weights were recorded. The ovaries were fixed in Bouin's solution for section and microscopic examination.

A total of 108 rats were employed in 2 series of experiments, and a different batch of chorionic hormone was used in each case. The results of the first series are shown in Table I, and it is seen that a slight augmentation of the ovarian weights over those of the controls receiving plain water was noted in the case of Padutin-Winthrop (insulin-free hormone from the pancreatin gland), Acthar-Armour (ACTH), Cortone-Merck (Cortisone), and Pitressin tannate in Oil (P.D.Co.). No augmentation was seen with Priscol-Ciba (benzazoline hydrochloride) nor Bistrium Bromide-Squibb (trimethylammonium bromide). The ovaries of the rats given neostigmine (Prostigmine-La Roche), however, weighed .042 and .049 g, representing a 27 and 48% augmentation over those of the water controls.

The results of the second series of experiments are illustrated in graphic form in Fig. 1, each column representing the average ovarian weights from groups of 5 or 6 rats. The first column (a) shows .037 g as the ovarian weight resulting from giving 750 I.U. of chorionic hormone on day 2, but no injection on the first day. The animals of columns (b), (c), and (d) received sesame

TABLE I. Chorionic Hormone 750 I.U. Given Intraperitoneally on Day 2 to Each Group.

Day 1 (3 subcut. inj.) Total dose	No. of animals	Avg body wt, g	Uterus, g	Ovaries, g
Water, 1.5 cc	4	67	.146	.035
	4	66	.146	.029
	3	60	.147	.034
Priscol, 18.75 mg	5	58	.134	.029
	4	63	.127	.032
Bistrium, 7.5 mg	5	62	.137	.024
	4	67	.133	.038
Padutin, 7.5 u	5	66	.143	.043
	4	63	.124	.037
ACTH, 1 mg	8	65	.144	.038
Cortone, 7.5 mg	3	59	.131	.038
Pit. tannate in oil, 3.75 pressor u	6	68	.121	.034
Neostigmine, .075 mg	4	63	.143	.042
	3	60	.110	.049

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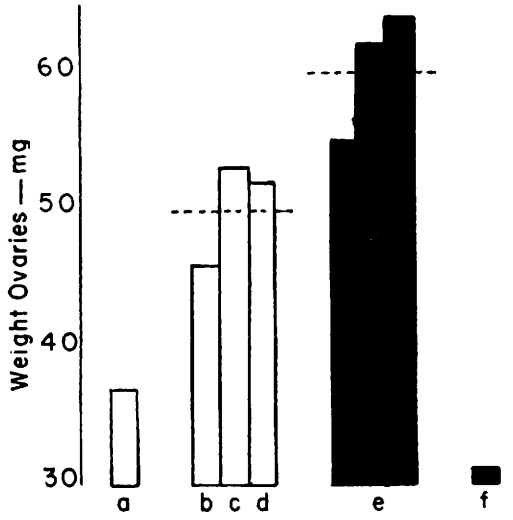

FIG. 1. Rats of column (a) received 750 I.U. of chorionic hormone without a preliminary injection. Rats of succeeding columns received, on day 1, sesame oil (b), cottonseed oil (c), plain water (d), and neostigmine (e), while on day 2 they were given the chorionic hormone. The order was reversed in those of (f), that is, day 1 the chorionic hormone and day 2 the neostigmine.

oil (0.75 cc), cottonseed oil (0.75 cc), and plain water (1.5 cc) respectively on day 1, and their average ovarian weight was 0.50 g. Column (e) is of 3 groups of rats given neostigmine (.075 g in 1.5 cc water) on the first day and shows an average ovarian weight of .060 g, an augmentation of 20% over the controls given injections of inert material on day 1 and of 62% over those not given any preliminary treatment.

In a previous report(2) it was shown that if the order in which the hormones were administered was reversed, namely, the chorionic hormone on the first day and stilbestrol on the second, there was no augmentation of ovarian weight. The same is true of neostigmine (Fig. 1f) for ovaries of only .032 g were found when it was given on day 2 and the chorionic hormone on day 1.

No histologic differences from the changes normally resulting from the administration of chorionic hormone were noted in any of the experiments.

Summary. The preliminary administration of various drugs, hormones, and inert substances such as plain oil or water, may result in a slight augmentation of the ovarian weight induced by chorionic hormone. A striking augmentation, however, has been obtained consistently by the injection of neostigmine on the day before giving the chorionic hormone.

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Effect of Various Plasma Volume Expanders on Erythrocyte Size. (19673)

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Quantitative determinations of acute blood volume changes may be made by studying the deviation from the expected biological decay curve of circulating erythrocytes tagged with P^{32}. In the course of studies following intravenous administration of 6% Dextran, one of us (LMM) observed that blood volume increase estimated in this manner was regularly greater than the increase calculated from the change in the peripheral hematocrit(1). This difference might be reconciled if a change in erythrocyte size or shape could be demonstrated. To determine whether such a change could be induced by Dextran or other plasma volume expanders, an *in vitro* experiment was performed under conditions approaching those *in vivo*.

Method. Venous blood was added to an appropriate amount of "balanced" oxalate, then divided into 4 equal aliquots, each of which was placed in a 125 cc siliconized flask. Because it was estimated that when 500 cc of