THE EFFECTS OF TESTOSTERONE, DIHYDROTESTOSTERONE AND OESTRADIOL ON THE COMB AND OVIDUCT OF THE FEMALE DOMESTIC FOWL*

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The possibility that dihydrotestosterone (DHT) may be the intracellular active form of testosterone (Bruchovsky & Wilson, 1968) has led to many investigations of their effects on reproductive structures in both sexes (Gloyna & Wilson, 1969; Gonzalez-Diddi, Komisaruk & Beyer, 1972). In this communication, the synergistic effects of testosterone propionate (TP) and DHT on oestradiol stimulation of the immature chick oviduct are compared.

Single-comb White Leghorn fowl, 12 to 15 days old at the start of the experiments, were used. Birds were the same age in any one experiment. The steroids (TP, DHT and oestradiol benzoate or dipropionate) were suspended in sesame oil and injected subcutaneously for 7 days. All animals, including the controls, received 0.1 ml sesame oil/day. At autopsy, the combs and oviducts were quickly removed and weighed to the nearest mg. Comb data are presented to give an indication of the androgen activity.

Table 1. The effects of oestradiol benzoate, testosterone propionate or dihydrotestosterone on comb and oviduct weights of female fowl treated for 7 days

<i>Dose/day</i>	<i>No. of fowl</i>	<i>Comb wt (mg ± S.D.)</i>	<i>Oviduct wt (mg ± S.D.)</i>
Control	9	51 ± 12	24 ± 7
10 µg OB	9	44 ± 15	102 ± 23
10 µg OB + 200 µg TP	10	434 ± 85	295 ± 56**
10 µg OB + 100 µg DHT	10	159 ± 59	191 ± 49
10 µg OB + 200 µg DHT	10	218 ± 54	213 ± 46
10 µg OB + 400 µg DHT	9	278 ± 64	239 ± 38
10 µg OB + 800 µg DHT	8	300 ± 60	247 ± 47

Age of fowl at autopsy = 22 days. OB = oestradiol benzoate; TP = testosterone propionate; DHT = dihydrotestosterone.

** $P < 0.01$ compared to all doses of DHT + OB.

In a series of experiments, it was noted that, when given alone, 50 µg or 200 µg of TP or DHT/day had no effect on oviduct weight. A daily 50-µg dose

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of either TP or DHT had about the same synergistic effect when given with 10 μg oestradiol. Table 1 contains data which allow a comparison to be made of the effects of higher doses of the androgens and it can be seen that 200 μg TP had a greater synergistic effect with 10 μg oestradiol benzoate than did 100, 200, 400 or even 800 μg DHT. Similar results were obtained in other experiments using oestradiol dipropionate.

The results from these experiments indicate that TP has a greater synergistic effect with oestradiol than DHT on the oviduct of the immature fowl.

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