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Sensitivity of the Baby-Chick Comb to Male Sex Hormone.*

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Of the various existing tests for the male sex hormone, that of the capon comb is generally recognized as being the most satisfactory. The cost of capons and their upkeep is a hindrance to wide use of this test. If baby chicks can be utilized to test for male hormone properties, the cost of such tests will be materially reduced.

The purpose of this investigation was to determine whether the comb of the baby chick is sufficiently sensitive to the action of male sex hormone to warrant the more extensive experiments necessary to establish that the baby chick may be used as a test object.†

As a preliminary experiment 3 groups of day-old, Single-comb White Leghorn chicks (7 chicks to the group) were injected subcutaneously with the male hormone product testosterone. A fourth group of 7 chicks was carried as controls. Group 1 received 25 gamma daily, and group 3 received 100 gamma. After 4 injections, 2 chicks of Group 1, 5 chicks of Group 2 and all those in Group 3 showed a definite increase in comb growth. Injections were continued on 3 chicks selected from Group 3. After 14 daily (except Sunday) injections these 3 chicks were photographed with their controls. Fig. 1 shows one of these chicks with its control.

In a second series of experiments, 117 other chicks were injected, some with testosterone and some with androsterone. Single-comb White Leghorns and Rhode Island Reds of both sexes were used. Their ages varied from 1 to 10 days of age, and injections of various amounts of material were made either in the base of the comb or in the breast muscle. Table I shows the results obtained. The control chicks in this series were injected with pure olive oil, except as otherwise designated in the table. The testosterone and androsterone were diluted with olive oil so that the smallest dose in any one experiment would be measurable with a fine syringe (0.01 cc.).

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TABLE I.
Weights of Combs of Chicks Injected with Testosterone (T) and Androsterone (A) and Controls.

Breed	Age Days	Days Injected No.	T Gamma	A Gamma	Injection site	Injected males No.	Aver. comb wt. Mg.	Control males No.	Aver. comb wt. Mg.	Injected females No.	Aver. comb wt. Mg.	Control females No.	Aver. comb wt. Mg.
Single Comb White Leghorn	3	6	1.25 to 10		Comb	13	32.2	5	15.8	14	35.8	6	14.3
	6	6	0.62 to 5		"	10	43.6	3	33.7	6	39.5	2	21.5
	6	6		6.0-50	"	9	54.1			7	59.3		
Rhode Island Reds	6	6	0.62 to 5		"	9	18.6	2	18.0	6	17.5	3	11.0
	6	6		6.0-50	"	10	22.0			6	24.2		
Single Comb White Leghorn	9	6	10		"	2	81.5	5*	22.6	2	57.0	4*	20.5
	9	6	10-40		Breast	15	55.5			5	34.8		
	9	10	10		Comb	3	304.5	2*	75.0	—	—	—	—

*Controls not injected with olive oil.

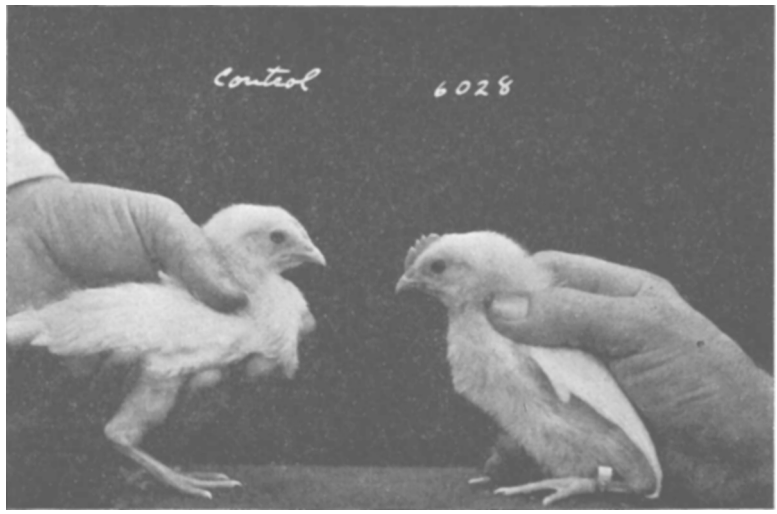

FIG. 1.
Chick 6028 received 10 injections (daily except Sunday) 1 B. U. testosterone in the base of the comb. The control was not injected.

The data in the table indicate that the female chicks were more sensitive than the male chicks, and that the White Leghorn chicks were more sensitive, at the ages used, than the Rhode Island Red chicks.

In most instances the chicks of the second series were injected from Monday to Saturday, inclusive, and sacrificed the following Monday. The one instance of 10 days of injections (See Fig. 1) and the one of 14 injections in the earlier experiment show results which indicate that the 8-day test may not fully utilize the sensitivity of the chick. However, the data are too few to be conclusive.

Chicks injected for 6 days in the base of the comb showed an average comb weight of a little over twice that of their controls, regardless of the amount of active material injected. It is therefore assumed that the smallest doses used, *viz.*, 0.6 gamma of testosterone or 6.0 gamma of androsterone, produce a maximal response.

Two chicks that received 14 daily injections of 100 gamma of testosterone over a period of 16 days were kept under observation to note the subsequent comb growth after discontinuation of the injections. Thirty-five days after the injections were stopped, the combs of these chicks were still larger than those of their controls.

Obviously the young chick is quite sensitive to testosterone and androsterone. Further work is in progress to standardize it as a test object.