

The Role of Iodine and Thyroid Gland on the Reproduction and Production of Chickens

II. Sexual Maturity

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THE effect of desiccated thyroid gland potassium iodide on Fayoumi chicks were investigated, chicks were fed these thyroactive Fayoumi substances when they were 18 weeks old on two levels : 200g or 100g desiccated thyroid /100kg, diet. Growth rate were three categories : fast, medium and slow. The age at sexual maturity had inhibiting effect on the related characters in fast and medium growth groups. Pullets of slow growing group matured earlier than controls and laid heavier eggs.

The earlier ages at sexual maturity of all the three rates of growth were noted by the low levels rather than the high ones.

The optimal physiological doses produce pre-mature sexual development in normal growing animals (Williams, 1965). Feeding of 0.02% thyroprotein to N. H. and W.L. pullets from the 6th to 24th week of age induced early maturity in pullets (Gonzga and Nanadiego, 1955). Turner (1948 b), fed thyroprotein as 10g/;00lbs.of ration to W.L. pullets and found that the treated birds started egg production a month later. The administration of small doses of iodinated casein 0.013 to 0.023 daily to R.I.R. pullets for 86 days (until the first experimental bird started laying), did not hasten sexual maturity (Schmidt, 1953).

Material and Methods

Four hundreds and fifty Fayoumi chicks hatched in December were fed the experimental ration (Table 1). Egyptian clover was supplied as green fodder. The chicks were reared and managed alike, body weight was recorded bi-weekly till the 18th week of age, then body weight was recorded monthly. Sexing was carried out at 13th week of age. Each sex was divided into three groups according to body weight, fast, medium and slow. At the 16th week of age birds were divided into 21 groups of treatments, 5 groups from the fast growing birds, 5 groups from the slow growing birds and 11 groups from medium weight birds. The specific treatment in every group are shown in Table 2. All the applied treatments continued for two months up till 26th week of age, date and body weight at sexual maturity were calculated. Also, the days spent for laying the first 10 eggs after sexual maturity and their weights were recorded.

TABLE 1. Experimental ration.

Ingredient	Percentage
Corn	50
Rice bran	14
cordecated cotten seed meal	20
Fish meal	3
Calcium carbonate	2
Salt	0.5
Mineral mixture	0.5
Total	100.00
Total protein	18.5
Crude fiber	10.0
TDN	27.0

Results and Discussion

1. Age at sexual maturity

Pullets of high growth rate began to lay their first egg earlier than the other groups, the slow growth rate pullets laid their first egg on the latest age, while the medium group attained sexual maturity on medium age (Table 3 and Fig.1).

The effect on the age at sexual maturity was more obvious in the slow growing group than the other two groups and the treated pullets laid earlier than their controls. These findings agree with the results of Turner (1948) and Gonzga and Nanadiego (1955), who induced sexual maturity by thyroprotein feeding. Negative effects were observed in the other two rates of growth, this was more obvious in the groups fed high level of thyroid. Williams (1965), stated that excessive levels of thyroid hormone exert an adverse effect on reproductive organs, while optimal physiological levels produce pre-mature sexual development in normal growing animals.

2. Body weight at sexual maturity

In the rapid growing group, the birds which were fed desiccated thyroid gland showed highest body weight. Meanwhile, the lightest body weight was notes in the group fed high level of KI (Table3). In the medium group, birds fed high level of desiccated gland after high sulfa treatment or without sulfa treatment showed the heaviest body weight. The lightest body weight was note when birds were previously fed low level of sulfa, then fed high level of thyroid. The low level of KI decreased body weight slightly than controls.

When the rate of growth was low, the high level of thyroid and low level of KI decreased body weight, while the highest body weight was observed by the high level of KI.

TABLE 2. The different treatments used in the study.

Growth rate	No. of treatment	Treatment substance, level and time
		A. Treatments used in the three levels of growth
Fast,	I	Desiccated thyroid high level for 2 months 200g/100kg diet
Medium	II	Desiccated thyroid low level for 2 months 100g/100kg diet
and	III	Potassium iodide high level for two months 39.213g/100kg diet, containing 30 g I.
slow	IV	Potassium iodide low level for 2 months 39.60g/100 kg diet, containing 15gI.
	V	Controls.
		B. Treatments added to used in the medium level of growth only
Medium	VI	Desiccated thyroid high level after sulfa treatment of low level for a month, 100g/100kg of diet.
	VII	Potassium iodide high level after sulfa- treatment of low level for a month.
	VIII	Desiccated thyroid high level after sulfa-treatment of high level for a month 300g/100kg of diet.
	IX	Potassium iodide high level after sulfa-treatment of high level for a month.
	X	Desiccated thyroid high level after serving as a control for a month.
	XI	Potassium iodide high level after serving as a control for a month.

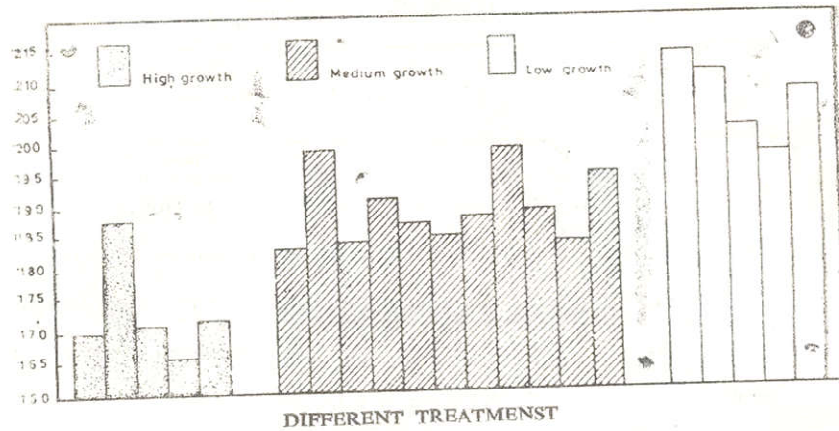


Fig. 1. The effect of different treatments on the age at sexual maturity of Fayoumi pullets

Body weight at sexual maturity was stimulated in high and medium growth groups by feeding high level of thyroid gland and low level of KI. When the rate of growth was low, the low level of desiccated gland and high level of KI increased body weight at sexual maturity.

3. Egg weight

The heaviest first ten eggs laid at sexual maturity were laid by the high growth rate group, the medium eggs by the medium group and the lighter eggs by the low growth rate group (Table 3). High level of thyroid did not increase egg weight of both high and medium growth rate groups. Meanwhile, the treatments increased egg weight of the low growth rate group. The highest increase was observed in the thyroid treatments.

4. The period of laying the first ten eggs

This trait did not show any difference between treatments. Most of the differences were observed between the three pullets groups different in growing rates. Pullets of high growth rate needed more time to lay the first ten eggs than the other two rates of growth (Table 3).

TABLE 3. The effect of different treatments on sexual maturity and related characters of pullets different growth rates.

Treat.	G.R.	Body wt. (g)	wt. of 1 st egg (g)	Mean of 10 eggs (g)	Laying Period days	Age (days)
I	High	1170.83	30.83	29.85	17	187
II		1158.00	26.60	28.85	17	171
III		1005.00	27.78	28.42	19	166
IV		1057.67	27.89	27.89	18	172
V*		1036.00	29.40	30.54	17	170
I	Medium	1087.14	28.14	28.37	15	199
II		1013.13	25.00	26.76	16	184
III		1025.00	27.75	29.22	16	191
IV		1002.27	27.63	28.10	16	187
V*		1013.88	29.05	28.80	16	183
VI		982.78	28.22	27.51	16	185
VII		1003.57	28.00	28.83	15	188
VIII		1113.33	27.67	27.47	17	199
IX		1026.67	28.11	28.90	16	189
X		1022.00	27.80	27.50	16	184
XI		1020.00	27.20	27.20	15	195
I	Low	1009.16	27.83	28.00	13	211
II		1049.17	28.00	29.37	13	202
III		1091.25	27.50	27.47	14	203
IV		950.70	24.00	27.96	15	198
V*		1039.17	26.50	27.10	13	241

* = control group

However, Kamar (1962), found that the secondary sex organs and characters were inhibited by different hyperthyroidism levels. Accordingly, the age at sexual maturity was delayed because of the treatment which continued after sexual developments. When the slow growing pullets matured after the treatments because, of their low rate of growth, the age at sexual maturity of such treated pullets was earlier than the controls within each of thyroid or iodine treatment, it was observed that low level enhanced age at sexual maturity than the high ones which explains the previous statement.

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تأثير اليود والغدة الدرقية على
الإنتاج والتناسل في الدجاج
الجزء الثاني - النضج الجنسي

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أعطيت الكناكيت في سن ١٨ أسبوع جرعات مختلفة من الغدة الدرقية
واليود بنسب مختلفة وقد أدى ذلك إلى نضوج الدجاج ذات النمو البطيء في
وقت مبكر *

كما لوحظ أن الأعمار المبكرة في النضج الجنسي هي في الدجاج
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