

GROWTH PATTERN OF MALE LAYING CHICKENS WITH THE ADDITION OF BIOHERBAL COMPOUNDS TO DRINKING WATER AGE 1-8 WEEKS

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Abstract:

Chicken growth is an indicator in determining the success of maintenance. This study was conducted with the aim of knowing and analyzing the growth pattern of male laying chickens fed bioherbal at the age of 1-8 weeks. The study was performed on 200 male laying chickens for 60 days. This research method was a field experiment with a completely randomized design, consisting of four treatments and five replications. The treatments were T0 (drinking water without bioherbal as control), T1 (control + bioherbal code 1M), T2 (control + bioherbal code 2H), and T3 (control + bioherbal combination of 1M and 2H). Data were analyzed descriptively. The variable measured was growth pattern of male laying chickens. The results showed that bioherbal code 2H as a feed additive produced the highest body weight of 868.00 grams. It can be concluded that bioherbal containing probiotics and biopharmaceuticals leaves group gave the best result in increasing growth and the harvest body weight.

Keywords —Bioherbal, Growth, Male Laying Chickens, Phytobiotics, Probiotics.

I. INTRODUCTION

Male laying chicken are classified as purebred chickens, which are one of the by-products of the production of male laying chickens with the aim of maintaining the use of their meat with good maintenance in order to be able to produce maximum meat production. Production of male laying chickens contributes to the supply of meat in Indonesia needed by the community in line with the increasing demand for chicken meat each year. The cultivation of male laying chickens in Indonesia is quite developed because many breeders are eyeing them for having several advantages compared to broiler chickens, in the form of a higher selling price for male laying chickens, having a meat texture that is almost similar to native chickens, and

higher immunity causing chickens to be more resistant to disease [1]. The key to the success of a livestock business is determined by seeds, feed, and maintenance management which of the three factors, feed occupies the highest component in the success of a livestock business because feed costs the largest around 60-70% of total production costs.

The strategy that can be used to increase the production of male laying chickens is to meet the nutritional needs of adequate livestock. The positive impact that arises as a result of meeting nutritional needs is increased productivity because metabolism in the body occurs properly so that livestock can produce optimally [2]. Another strategy that can be done is to optimize the use of feed by adding feed additives. These additives will spur optimal livestock growth, increase productivity and

production quality. Some feed additives that are widely used are additives with a natural basis, such as probiotics, prebiotics, enzymes, organic acids, and phytobiotics which are alternatives to AGP (Antibiotik Growth Promotor) in accordance with the official ban by the government due to the dangers posed to both consumers and livestock from using AGP. Bioherbal is a feed additive combination of probiotics and phytobiotics where it is hoped that their synergistic properties will provide better effectiveness in increasing the growth of chickens. Probiotics are non-pathogenic microorganisms that can be beneficial to the body's physiology, and produce antimicrobial compounds that can inhibit or even kill the growth of pathogenic bacteria [3]. Phytobiotics are Natural Growth Promoters (NGP) derived from herbs, spices or other plants because they contain a number of antimicrobial, antiviral and antioxidant substances [4].

The growth pattern describes the ability of an individual livestock to develop body parts until it reaches adult size in the available environment both in terms of production, quality and quantity of feed, as well as the location of the stables. Genetics and the environment are important factors that influence the growth of each livestock species [5]. Based on the description of the background, this study aims to determine the growth pattern of male laying chickens given bioherbal at the age of 1-8 weeks.

II. RESEARCH MATERIALS AND METHODS

A. Research Materials

This study was used 200 male laying chickens, open house cages, commercial starter and finisher feeds, bioherbal 1M and 2H, vaccines, medicines, and cage equipment.

B. Research Methods

The method was used an in vivo field experiment using a completely randomized design (CRD) with the treatment of adding bioherbals as an additive to drinking water which was divided into 2 codes, namely codes 1M and 2H given at a dose of 2ml/liter of drinking water. The study consisted of 4 treatments with each treatment consisting of 5

replications so that there were 20 experimental units. Each replicate consisted of 10 chickens.

The treatment given in this study included:

- T0 = Drinking water without any bioherbal (control)
 T1 = Control + Bioherbal Code 1M
 T2 = Control + Bioherbal Code 2H
 T3 = Control + Bioherbal Code 1M and 2H, alternating between the two every week

TABLE I
BIOHERBAL COMPOSITION OF 1M AND 2H

1M	2H
Aromatic Ginger	Kalmegh Leaves
Curcuma	Betel Leaves
Ginger	Moringa Leaves
Turmeric	Papaya Leaves
Actinomycetes	Actinomycetes
Lactid Acid Bacteria	Lactid Acid Bacteria
Photosynthetic Bacteria	Photosynthetic Bacteria
Yeast	Yeast
Fermented Fungi	Fermented Fungi

C. Research Variable

The observed variable was the growth pattern of male laying chickens which was obtained by knowing the body weight and body weight gain.

1. Body Weight

Body weight is the weight of male laying chickens in a live state which is weighed every week using a digital scale in grams.

2. Body Weight Gain

The body weight gain of male laying chickens can be determined by weighing the chickens using digital scales by calculating the difference between the final body weight and the initial body weight

D. Data Analysis

The data obtained were analyzed descriptively by presenting body weight, estimated growth rate, and relative growth rate (%). The relative growth rate of male laying chickens is calculated and depicted in the form of a line graph curve. The relative growth rate formula used is:

$$\text{Relative Growth Rate (\%)} = \frac{W_t - W_0}{W_0} \times 100 \%$$

Information:

W_t = body weight at age t_2 ,

W_0 = body weight at age t_1 ,

The formula for the growth rate coefficient (k) is:

$$k = \frac{\ln W_t - \ln W_0}{(t_2 - t_1)}$$

The formula used to predict optimal growth according to Broody [6] is as follows:

$$W_t = W_0 x e^{kt}$$

Information:

W_t = body weight at age t (g),

W_0 = body weight at age 0 (initial) (g),

t = age (weeks),

k = growth rate coefficient,

e = constant (natural number = 2.7183)

Information:

k = growth rate coefficient,

W_t = body weight at age t_2 ,

W_0 = body weight at age t_1 ,

t_1 = one week old before weighing

t_2 = age at weighing

III. RESULTS AND DISCUSSION

TABLE 2
BODY WEIGHT AND RELATIVE GROWTH RATE OF MALE LAYING CHICKENS AGE 1-8 WEEKS

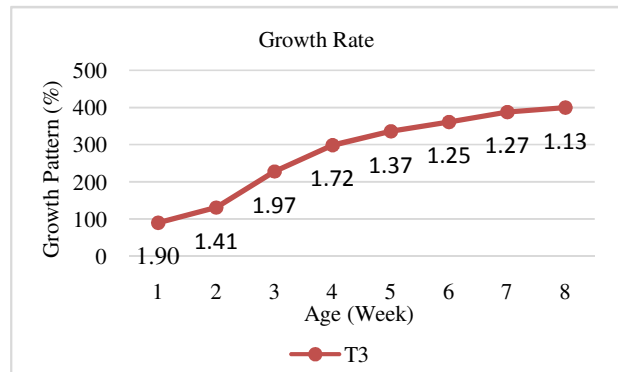
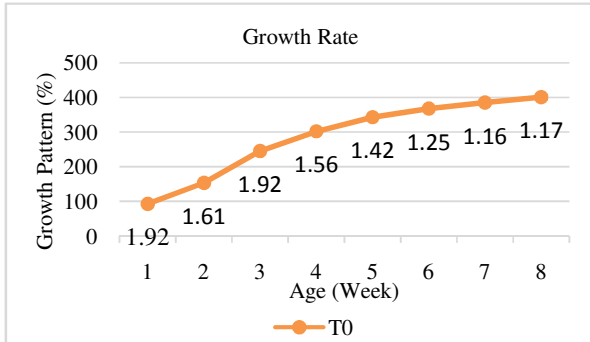
Treatment	Parameter	Age (Week)							
		1	2	3	4	5	6	7	8
T0		70.3	113.3	217.7	340.0	482.4	602.4	700.9	818.7
T1	Body Weight (g)	66.9	113.9	197.6	312.7	452.4	567.8	732.0	836.3
T2		66.6	108.7	200.7	314.7	442.4	568.8	721.3	868.0
T3		71.0	100.3	197.3	338.7	463.2	579.0	733.3	826.3
T0		Relative Growth Rate (%)	92	153	245	302	343	368	385
T1	83		153	226	285	329	355	384	398
T2	77		140	225	282	322	355	378	398
T3	90		131	228	299	336	361	388	400

The results of observations and analysis on body weight and growth rate of male laying chickens given 4 treatments can be seen in Table 2 and the growth rate curve can be seen in Figure 1.

The body weight of male laying chickens increased and had different values for each treatment. Table 2 shows that at 8 weeks of age or

harvest, the body weights of the chickens from lowest to highest were T0, T3, T2, and T3 of 818.7, 826.3, 836.3, and 868.0 grams, respectively. The T2 treatment with the addition of bioherbal code 2H had the highest yield weight because the

bioherbalcode 2H was made from several herbal leaves and probiotics which caused the quality of the feed to increase so that the nutrients in the feed could be absorbed and converted into meat products. This happened because of the role of the addition of bioherbals which affected the performance of chicken organs so that it had an impact on chicken growth. The increased body weight reflects that the

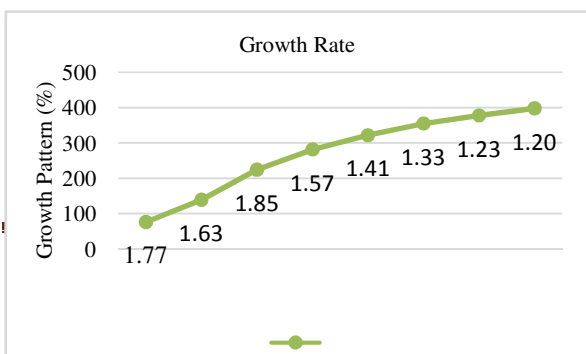


substance content in the feed consumed by livestock has fulfilled their nutritional needs to be used for growth. Indicators of nutrient absorption that are going well can be seen from the body weight produced at the end of maintenance [7]. Betel leaves in 2H bioherbal contains essential oils which function to improve the work of the digestive organs by maintaining the condition of the intestinal microflora and stimulating the gastric secretion system in producing several enzymes such as pepsin, trypsin, lipase, and amylase which can increase food metabolism, as well as an antibacterial in digestive tract so that the absorption of nutrients for growth will work optimally [8].

- (a)
- (b)
- (c)
- (d)

Fig. 1 Growth rate curves of male laying chickens (a) without bioherbal, (b) bioherbal code 1M, (c) bioherbal code 2H, and (d) bioherbal code 1M and 2H

Figure 1 shows that the relatively fast growth



pattern in male laying chickens occurs during the first 4 weeks. This is because starter period chickens have an important role in growth. During the starter phase, the feed given to livestock must have a high protein content to accelerate growth, whereas when entering the finisher phase, energy will be stored in the form of fat, so the feed given must have a higher energy content than protein [9]. In accordance with the rearing period, where the change of feed is given at the age of 25 days, so that differences in growth patterns can be seen. The age of 1-4 weeks is the starter phase of chickens, at which time the condition of the chickens undergoes a critical growth process which will determine further growth until the harvest period. The growth rate of bone shape can be influenced by genetic factors, feed, and hormonal functions that affect tissue growth and development [10]. The content of feed that increases growth is protein, one of which is lysine which functions as the basis for growth in bone cells, where the amino acid lysine will support the process of absorption of calcium in bone formation which will affect the length and body weight of livestock.

The growth pattern of laying chickens in Figure 1 shows that chickens experience relatively stable growth. This happens because during the starter phase, chicken organs experience better formation and repair in line with the feed consumed. Chicken growth depends on the age of the chicken. Rapid

chicken growth occurs before the chicken enters the puberty phase, namely the age of the chicken after birth until before sexual maturity, which will then slow down when the body's maturity has been reached [11].

TABLE 3
 Optimal Growth Estimation

		Age (Week)							
		1	2	3	4	5	6	7	8
T0		40.17	80.57	149.89	280.87	436.52	583.58	700.93	837.03
T1	Wt	39.90	77.89	144.23	256.84	407.08	549.67	732.00	852.41
T2	(g)	40.81	76.61	141.37	259.51	401.37	563.59	721.33	891.26
T3		41.03	78.37	134.04	268.66	423.56	560.83	733.33	840.55

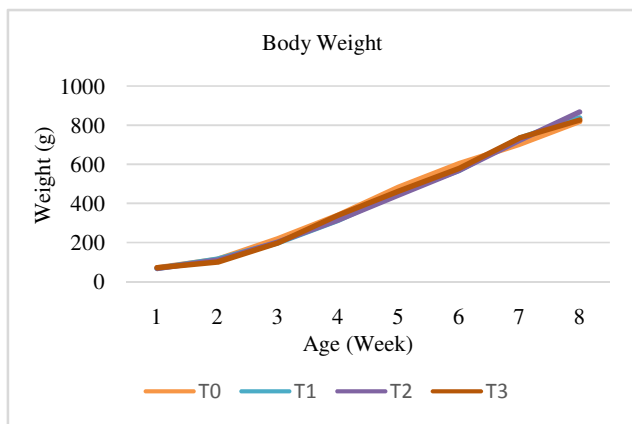


Fig. 2 Body Weight Curve of Male Laying Chickens

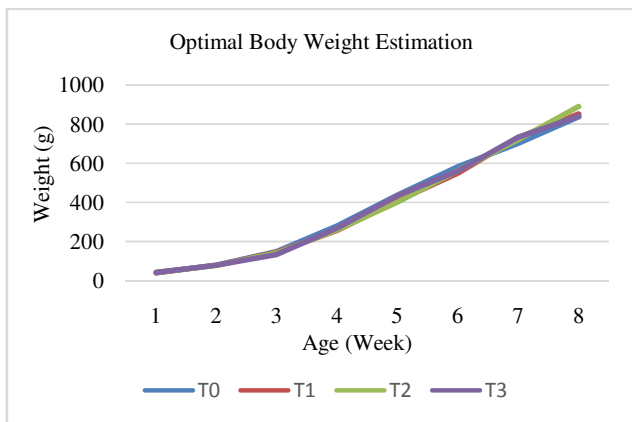


Fig. 3 Optimal Body Weight Estimation of Male Laying Chickens

The body weight of male laying chickens was not much different from the estimated growth in Table

3. The body weights of the real harvest of chickens from lowest to highest respectively were T0, T3, T1, and T2 of 818.7, 826.3 836.3, and 868.0 grams, while in Table 3 it can be seen that the estimated body weight at week 8 at harvest age from lowest to highest respectively were T0, T3, T1, and T2 of 837.03, 840.55, 852.41, and 891.26 grams. P2 male laying chickens with the addition of 2H bioherbal gave higher body weight compared to other treatments. A lower growth rate with an estimate of the optimal growth rate reflects that the chicken has experienced a slowdown in growth [6]. This is thought to occur due to different genetic factors in each individual chicken and the environment.

IV. CONCLUSION

Male laying chickens that were given the addition of bioherbal containing probiotic and biopharmaceuticals leaves group as additives gave the best results in increasing growth resulting in high harvested body weight.

V. SUGGESTION

It is recommended for further research to add bioherbals with different doses.

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