



Evaluation of Feed Additive Liquid Nano Herbal Extract in Mash Form and Protected as a Feed Supplement to the Appearance of Laying Hen Production

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Abstract. Laying chickens are a type of poultry that has high egg production. This research aims to determine the evaluation of the addition of feed additives to the production performance of laying hens. This research used 400 laying hens of the Isa Brown strain aged 52 – 57, which were kept for 35 days. feed is given on a limited basis. This research method was carried out in vivo using a Completely Randomized Design (CRD) with a nested pattern consisting of two factors, namely mash form (B1) and protected (B2), each factor has 5 levels of addition, namely L0: basal feed without additional additives. feed, L1: basal feed + 0.2% feed additive, L2: basal feed + 0.4% feed additive, L3: basal feed + 0.6% feed additive, L4: basal feed + 0.8% feed addition, each addition level consists of 4 repetitions. The data obtained will be analyzed using Analysis of Variance. If the results obtained are different or significant, it will be continued with Duncan's Multiple Distance Test (UJBD). The variables analyzed were feed consumption, feed conversion, HDP, egg weight and egg mass. The results of this study indicate that the effect of adding feed additives has an insignificant influence ($P>0.05$) on feed consumption, feed conversion, HDP, egg weight and egg mass, but has a significant influence ($P<0.05$) on the level of consumption. The addition of liquid nano extract in the form of protection at the level of 0.8% can increase the productivity of laying hens.

Keywords: Laying Hens, Production Appearance, Probiotics.

1 Introduction

Indonesia is a country that has a variety of jobs, one of which is laying chicken farmers. Laying chickens are a type of chicken breed that has the potential to reproduce 250 280 eggs/year with an average weight of 50 – 60 grams, and is a type of chicken that is easy to maintain in tropical climate areas [1]. The productivity of laying hens will be optimal if the feed is given feed additives in the form of antibiotic growth promoter (AGP). AGP functions as a booster for the body's metabolic rate so that the production process is more optimal, chickens will be more immune to disease, however the use of AGP is prohibited by the government Number

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14/PERMENTAN/PK.350/5/2017 concerning the classification of veterinary medicines. Therefore, it is an alternative substitute. AGP is a natural ingredient that contains bioactives in the form of phytobiotics [2]. Ginger, turmeric and teak leaves are types of phytobiotics that can be used as feed additives because they contain antioxidants [3]. However, if it is used in the form of a nano extract, it will easily degrade, therefore one alternative for using feed additives is to carry out a liquid nano process and convert it into a protected, mash form.

Nanoparticles are a technology that works by emitting ultrasonic vibrations, by emitting these vibrations the particles in the solution will be broken down into small molecules [4]. Protection and mash is a type of applied technology that works to protect active substances by using natural coatings with energy content such as polysaccharides [5]. The use of liquid nano extract technology will be more efficient if used in mash and protected form so that it will provide optimization in improving the performance of laying hens. The aim of this research is to evaluate liquid nano herbal extract in mash and protected form on the performance of laying hens including (feed consumption, feed conversion, HDP, egg weight and egg mass).

2 Materials and Methods

2.1 Materials

1. Maceration, is an extraction method used to dissolve active compounds, using ginger, turmeric and teak leaf powder with the addition of 70% ethanol, the ratio used (1% herbal powder and 5% 70% ethaol)
2. Extraction is a process of separating compounds or bioactives in either solid or liquid form which is used using certain solvents with the help of microwaves in an MAE tool. The tool used is Microwave Assisted Extraction
3. Nano technology, the process of breaking particles using ultrasonic waves so that compounds are broken down, nano technology is carried out after the MAE process. The tool used is an Ultrasonic Homogenizer Sonicator (UCD – 250/ 250W/ 220V/50Hz/C2021111127)
4. Protected, the protection process is carried out by combining the resulting liquid nano extract with maltodextrin coating in the ratio (7% herbal extract and 3% maltodextrin, aimed at protecting the active compounds in the herbal content. The tool used for the protection process is a 25 L. 450W manual Microwave.
5. Mash, is a coating process for the active compound content in liquid nano extracts which functions to protect the nano extracts so that they are not easily degraded. The coating usually uses a type of energy substance such as polysaccharides such as cassava. The tool used is an electric oven.

2.2 Methods

The research method used was a completely randomized design (CRD) with a nested pattern with two factorials, namely liquid nano extract in mash form (B1) and liquid

nano extract in protected form (B2). Each treatment consists of 5 levels, namely 0%, 0.2%, 0.4%, 0.6% and 0.8%, with 10 treatments and each consisting of 4 replications. A total of 40 treatment units with each place containing 10 laying hens. Maintenance is carried out for 35 days using an open house housing system. The following treatment is given:

a) Liquid Nano Extract Mash Form (B1)

B1L0: Basal feed

B1L1: Basal feed + 0.2% liquid nano extract in mash form

B1L2: Basal feed + 0.4% liquid nano extract in mash form

B1L3: Basal feed + 0.6% liquid nano extract in mash form

B1L4: Basal feed + 0.8% liquid nano extract in mash form

b) Protected Form Liquid Nano Extract (B2)

B2L0: Basal feed

B2L1: Basal feed + 0.2% protected form liquid nano extract

B2L2: Basal feed + 0.4% protected form liquid nano extract

B2L3: Basal feed + 0.6% protected form liquid nano extract

B2L4: Basal feed + 0.8% protected form liquid nano extract

3 Results and Discussion

3.1 The Effect of Using Liquid Nano Extract Feed Additives in Mash and Protected Forms on the Productivity of Laying Hens

The results of the productivity performance of laying hens given the liquid nano extract feed additive in mash and protected form include feed consumption, feed conversion, HDP, egg weight and egg mass can be seen in Table 1.

Table 1. Average values of feed consumption, feed conversion, HDP, egg weight and egg mass.

Variables	Treatment	
	Mash (B1)	Protected (B2)
Feed consumption (g)	116.87 ± 10.47	116.43 ± 8.44
FCR	2.48 ± 0.49	2.38 ± 0.70
HDP	75.5 ± 13.03	78 ± 19.23
Egg weight (g)	62.28 ± 5.39	63.27 ± 4.26
Egg mass	47.11 ± 6.47	49.29 ± 11.86

Based on the data in Table 1, it can be explained that the effect of adding liquid nano extract in mash and protected form has an insignificant effect ($P > 0.05$) on feed consumption, feed conversion, HDP, egg weight and egg mass, this is due to the presence of The coating equation is in the form of an energy substance that is given both mash

and protection so that it does not have a significant effect, supported by the statement of Akhsan et al. [6] which explains that if the active substance components are coated, they will not experience damage if heated to an average temperature. 30 – 90°C so it does not provide significant results.

3.2 Effect of Nesting Level of Mash and Protected Liquid Nano Extract

The results of the value of the productivity performance of laying hens given the nested liquid nano extract feed additive in mash form include feed consumption, feed conversion, HDP, egg weight and egg mass can be seen in Table 2.

Table 2. Average values of feed consumption, feed conversion, HDP, egg weight of feed additives in the form of mash

Variables	Treatment				
	B1L0	B1L1	B1L2	B1L3	B1L4
Feed consumption (g)	119.40±0.84	118.45 ± 1.82	117.15 ± 2.10	116.80 ± 1.82	112.58 ± 8.49
Feed conversion	2.56 ± 0.10	2.52 ± 0.11	2.61 ± 0.53	2.44 ± 0.25	2.29 ± 0.18
HDP	72.10 ± 5	72.50 ± 9.5	75.00 ± 12.90	77.50 ± 9.5	80.00 ± 0
Egg weight (g)	64.55 ± 1.40	61.50 ± 1.83	61.49 ± 3.55	62.50 ± 1.52	61.38 ± 2.12
Egg mass	46.75 ± 2.17	45.08 ± 4.67	46.28 ± 9.47	48.35 ± 5.11	49.10 ± 1.70

The results of the value of the productivity performance of laying hens given the nested level liquid nano extract feed supplement in protected form include feed consumption, feed conversion, HDP, egg weight and egg mass can be seen in Table 3.

Table 3. Average values of feed consumption, feed conversion, HDP, egg weight of feed additives in the form of protected

Variables	Treatment				
	B2L0	B2L1	B2L2	B2L3	B2L4
Feed consumption (g)	118.78±0.93	117.65 ± 2.52	117.23 ± 2.54	114.90 ± 0.25	113.63 ± 3.19
Feed conversion	2.55 ± 0.23	2.52 ± 0.12	2.44 ± 0.16	2.16 ± 0.15	2.23 ± 0.20
HDP	75.00 ± 10	72.50 ± 5	77.50 ± 5	85.00 ± 5.77	80.00 ± 8.16
Egg weight (g)	64.55 ± 1.40	61.50 ± 1.83	61.49 ± 3.55	62.50 ± 1.52	61.38 ± 2.12
Egg mass	46.85 ± 4.54	46.75 ± 2.11	48.08 ± 2.54	53.43 ± 3.99	51.35 ± 5.22

Based on the data in Tables 2 and 3, it can be explained that the effect of the level of addition of mash and protected liquid nano extract has no significant effect ($P>0.05$) on feed conversion, HDP, egg weight and egg mass, this is due to feed additives. has a slight interaction effect on the performance rate, so that the highest addition of 0.8% has a slight impact on the performance rate, this is supported by Sulaim-

an, et al. [7] explained that the results had no real effect because the results of egg weight, FCR and HDP were interconnected.

Based on the data in Tables 2 and 3, it can be explained that the effect of the level of addition of mash and protected form of liquid nano extract has no significant effect ($P < 0.05$) on feed consumption, this is because at the smallest level, up to 0.8%, consumption decreases. due to the increasing content of feed additives. This opinion is supported by Prabewi et al. [8] who explain that feed additives containing high energy content will have an impact on reducing feed consumption.

4 Conclusion

- a. Protected form of feed additives can have the best effect in increasing the productivity of laying hens
- b. The level of addition of liquid nano extract in mash and protected form obtained the best results at the level of 0.8% on the production performance of laying hens.

Disclosure of Interests. The authors have no competing interests to declare that are relevant to the content of this article.

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