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Effect of Noni Leaf Flour on Eggs Productivity of Quail

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Abstract

This study was conducted to determine the effect the noni leaf flour on the productivity of quail. Morinda citrifolia leaves are dried, then grounded to a flour. Completely Randomized Design (CRD) was used to analyze the data obtained from this study. Ninety-six-seven weeks old quails were divided into 4 (four) treatment with 3 (three) replicates and each replicate consisting of 8 (eight) quails with a ratio of 3 : 1, where in one replication consisted of 6 female and 2 male quails. Treatment given that R0 (commercial feed), R1 (commercial feed + 3% noni leaf flour), R2 (commercial feed + noni leaf flour 6%) and R3 (commercial feed + 9% noni leaf flour). The productivity parameters are measured that consist of hen egg day, feed consumption, egg production, feed conversion and hatchability. The results showed that the treatment significantly affected (P <0.05) hen day, feed consumption, egg production, and feed conversion. However, it was not significantly (P> 0.05) on hatchability. The use of 9% of noni leaf flour in feed accelerated sex maturity of quail. Quail treated with noni leaf flour had 58.70% hen day and egg production more higher 2.65 kg compared to other treatments. Eggs from 9% Noni flour treatment was the heaviest, therefore noni leaf flour is more effective in producing hatchery eggs than eggs for consumption

Keywords: Noni leaf flour, quail and productivity.

1. Introduction

Quail (Conturnix-conturnik japonica) is one of the poultry that are being developed and upgraded for its production. The product is mainly eggs that have a huge potential in the market. Quail eggs demand is constantly increasing. Wilson et al. (1961) states that female quail start laying eggs at the age of 35 days (average 40 days) and a full production at the age of 50 days. In an appropriate environment quail production has a long period, producing eggs an average of 250 eggs per year. Quail are able to produce 3-4 generations in a year. High egg production until the end of production can be achieved by providing good quality food as needed.

Enormous demand for its eggs is causing many farmers used an antibiotics as a growth promoters to increase productivity of the quail. However, the use of antibiotics have a negative consequences for consumers who consume livestock or products of livestock. Livestock will become resistant to antibiotics and residues of antibiotics in livestock products will be carried over in an eggs and meat.

Noni is known as one of medicinal plant which in recent years is on demand from the agribusiness entrepreneurs, traditional medicine industry and scientists. The demand is due to all parts of the noni plant contained various chemical compounds that can be utilized. Noni plant (Morinda citrifolia L.) is a family Rubiaceae, shaped trees, the entire plant can be utilized. Fruit, leaves and roots are used. Noni leaf contains Antraquinon, amino acids, glycosides, phenolic compounds, and acid ursulat.

Based on qualitative test, noni leaf extract contains alkoloid, saponins, flavonoids, and glokosida triterfenoid. Flavonoids can be used as an antioxidant (Hadisaputra, 2008).

Noni leaves are bulky and highly perishable, so the processing of the leaves of Morinda citrifolia should make it become durable, easily stored and easily distributed as antibiotic. One form is often used to make it as a flour.

2. Materials and Method

2.1. Location and Time

The study was conducted in the village of Cilangkap, Cikembar Sukabumi and all materials and results analyzed in the Laboratory of Animal Nutrition of Poultry Science, Faculty of Animal Science, Bogor Agricultural University.

2.2. Materials

The experimental materials used 96 quails, aged 4 weeks and was cared for 2 months. This study uses a commercial ration with nutritional substances can be seen in Table 1.

Table 1: Proximat Analysis of Quail.

Feed Nutrient	Percentage
Dry Matter	88
Ash	8
Protein	21-23
Fiber	4
Fat	4-8
Calcium	0,9-1,2
Phosporus	0,7-1

Equipments were a colony cages with 12 units, each colony size of 182 cm x 100 cm x 60 cm, food and drinking equipments, chopper machine, hammer mill, feed commercial and noni leaf flour.

2.3. Method

2.3.1. Noni Leaf Flour manufacture

Noni leaves are harvested then selected and chopped. This leaves then sun-dried and grounded into flour after dry.

2.3.2. Experimental Design

Experimental design used in this research was Completely Randomized Design (CRD) with 4 treatments and 3 repetitions:
R0 : Commercial feed only
R1 : Commercial feed + Noni leaf flour 3 %
R2 : Commercial feed + Noni leaf flour 6 %
R3 : Commercial feed + Noni leaf flour 9 %

Variables measured were egg productivity include eggs production (hen day) and eggs quality.

The data obtained will be analyzed using ANOVA and Orthogonal Contrast Test (Steel and Torrie, 1991).

3. Results and Discussion

Noni leaf flour began to be given in the feed at 4 weeks old quail. The use of noni leaf flour gave significant effect on productivity quail. Quail fed with 9% noni leaf flour have had sexual maturity faster than other quail. Quail fed with 9% noni leaves flour (R3) lay eggs at the age of 5 weeks, while R0 (commercial feed) mature sex at week 7. Previous research on the use of noni leaf extract in drinking water showed that the quail quail start laying eggs at the age of 7 weeks (Wardany, 2012). Also, according to Hasan et al (2003), that the age of first laying quails average of seven weeks, but Trollope (1992) and Mufti (1997) reported that quail start laying eggs at the age of six

weeks, further research Lubis (2007) reported that the age of first spawning quail was 41.33 days and Subekti et al (2006) reported that the age of first laying quail is 46 days. This suggests that the use of noni leaf flour to feed quail quail caused sexual maturity faster. North and Bell (1990), states that sexual maturity is influenced by several factors, including health, governance cage and feed as well as other factors such as genetic, lighting and body weight.

Hen day egg production is a percentage of the production in a certain period based on the number of quail that exist at any time in the relevant period (North and Bell, 1990). Hen day in this study was calculated at the end of the study. Results of analysis of variance showed that the treatment significantly affected Hen day (P <0,05). R3 (commercial feed and noni leaf flour 9%) have the hen day 58.70% higher compared with the other treatments. Hen day range in this study was 13.06 to 58.70% (Table 2). The use of noni leaf extract in drinking water have the quail hen day from 36.02 to 46.48% (Wardiny, 2012). This indicates treatment with noni leaf flour more effectively to improve hen day.

Hen day egg production (%) in the study was higher compared with the results of Zahra et al., (2012) which had a range of 14-22% hen day maintained for 12 weeks. But still low when compared with Hertamawati study (2006) had a range of 39.71 to 65.40% hen day. Lubis (2007) from 75.43 to 76.64% and maintained for 23 weeks Subekti et al (2006) from 61.03 to 63.71% maintained for 25 weeks. Egg production is a trait inherited by the parent (Ensminger, 1992). Besides egg production is affected by light and feed protein content (Mufti, 1997), further Romanoff (1963) says that to be able to lay eggs of birds must have properties (ability) a good spawn, free emergency physiological disorders and get feed and a good environment.

Quail production peak occurred at the age of five months with an average percentage of spawn 76 times. In this study the possibility of egg production is still low and this is because quail are still in a phase of adaptation to spawn (Wardiny, 2012).

Tabel 2: Quail Productivity during the study.

Variables	Treatment			
	R0	R1	R2	R3
Hen day (%)	13.06±3.70a	43.89±0.67b	54.54±1.07bc	58.70±2.83c
Feed Consumption (gr)	2290±837.15a	4060±105.20b	4319±39.61b	4194.33±63.63b
Egg Production (kg)	0,48 ±474.19a	1,64±161.22b	2,34±102.53c	2,65±323.45c
Feed Conversion (%)	9.52±7.26a	2.50±0.25b	1.84±0.08b	1.60±0.20b
Hatchability (%)	30	30	80	60

Note: R0 : Commercial feed only , R1: Commercial feed + Noni leaf flour 3 % ,
R2 : Commercial feed + Noni leaf flour 6 % , R3 : Commercial feed + Noni leaf flour 9 %

Results of analysis of variance showed that the treatments have had a significant effect on feed consumption, egg production and feed conversion. Table 2 shows that the highest egg production is R3 (commercial feed and noni leaf 9%). Feed consumption for R3 was 4,194.33 grams during the study. While the egg production of R3 was the highest 2.65 kg. R3 feed conversion showed lower compared to other treatments. This shows that the quail by treatment with R3 provides efficient use of feed to produce eggs. The lower feed conversion showed more efficient use of feed, due to the less amount of feed required to produce 1 gram egg. Feed conversion value is strongly influenced by the quality of the feed and the ability to transform feed into eggs. It is also affected by the condition or health status of the quail. Provision of noni leaf flour in this study affect the weight of the egg. Egg weight range for R3 (commercial feed and noni leaf flour) was 12-13 grams. While the normal range quail eggs was 8-10 grams. Hatchability in this study ranged from 30-80%. R2 (commercial feed and noni leaf flour 6%) have the highest hatchability 80%.

4. Conclusion

The use of noni leaf flour at the level of 9% in the diet can accelerate sexual maturity quail. Quail fed 9% noni leaf flour has had a hen day at 58.70% and production of eggs at 2.65 kg. Eggs from treated 9% had greater egg weight but low in hatchability. Therefore noni leaf flour is more effective to produce eggs for consumption instead of eggs for hatch.

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