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Performance of Local Peking Duck (*Anas platyrhynchos domestica*) with Commercial Probiotics (*Probac*) at Different Levels

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Abstract

Local Peking duck is one of the superior ducks that breeders are interested in keeping. The maintenance of broiler ducks often occurs with several obstacles including mortality, high feed conversion and target body weight that has not been achieved. The use of probiotics generally gives a positive response on livestock performance. This study aims to determine the performance of local Peking ducks with the addition of commercial probiotics (Probac) at different levels. The study used an experimental method with a completely randomized design with 4 treatments and 5 replications. Experimental level with P0 (without probiotics), P1 (1g/kg feed probiotics), P2 (2g/kg feed probiotics), P3 (3kg/kg feed probiotics) The variables observed were body weight, feed conversion and mortality. The best results showed that the use of a commercial probiotic (Probac) with a P2 level (2g/kg feed) had an effect on body weight, but had no effect on feed conversion and mortality in local Peking ducks. It is recommended to use a commercial probiotic (Probac) at a dose of 2g/kg of feed to increase the performance of local Peking ducks.

Keywords: *Probiotic, Performance, Broiler duck*

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1. INTRODUCTION

Peking duck is one of the superior types of meat-producing ducks. Peking duck is one of the meat-producing poultry that is in great demand by the public. The short process of rearing Peking ducks with a harvest period of about 35 days is one of the livestock that breeders are starting to be interested in raising (Ridwan, 2019). The maintenance of broiler ducks often occurs with several obstacles including mortality, high feed conversion and target body weight that has not been achieved.

Such constraints can be reduced, for example, by using probiotics. The use of probiotics is carried out because they are a substitute for antibiotic growth promoters (AGP) which have been banned by the government and are listed in law no. 18/2009 juncto Law No.41/2014 concerning Animal Husbandry and Animal Health which states the prohibition of using feed mixed with certain hormones and/or antibiotics as feed additives (Arnold et al 2017). Probac is a probiotic product that can be used because it contains several beneficial bacteria for the digestive tract of livestock. Several types of beneficial bacteria include *Bacillus licheniform, Bacillus subtilis* , *yeast* and multi-enzymes.

The use of probiotics generally gives a positive response to livestock performance (Soeka et al. 2011). The use of *Probac* as a feed additive is expected to reduce the number of pathogenic bacteria in the digestive tract and improve performance in broiler ducks so that rearing is more efficient. Giving commercial probiotic (*Probac*) as a commercial additive is needed to determine the level of effectiveness on the performance *of* Peking duck IokaI.

2. RESEARCH METHODS

2.1 Tools

The equipment used includes; experimental cages, places to feed and drink, stationery and scales

2.2 Materials

Research materials used include; 300 dod produced by PT. PPM, mixed feed, starter feed B401 PT Sreya Sewu Indonesia, commercial probiotic *(Probac*) with the content of *Bacillus licheniform* and *Bacillus subtilis bacteria* respectively 2 x10 ^{7} cfu/gram, Yeast *Saccharomices cerevisiae* and multi enzymes and drinking water.

2.3 Research Design

The study used a completely randomized design (CRD) with 4 treatments and 5 replications where the treatment levels were described as follows;

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P0 : mixed feed

P1: mixed feed + probiotics 1gr/1kg P2: mix feed + probiotics 2gr/1kg P3: mixed feed + probiotics 3gr/1kg

2.4 Trial Phase

Feeding with probiotics was carried out at the age of 14 days to 35 days, while at the age of 1-13 days using starter feed b401 Pt. Sreya Sewu Indonesia. Maintenance consisted of 15 birds per treatment and replications

2.3 Research Variables

The variables observed were: body weight, feed consumption, feed conversion and mortality

2.4 A data analysis

Data were analyzed using analysis of variance with the help of the SPSS program, if it had an effect, it was continued with an honest real difference test to find out the differences between treatments

3. RESULTS AND DISCUSSION

The results of the use of commercial probiotics (*Probac*) with different levels of feed on the performance of broiler ducks at the age of 14-35 days are shown as follows:

Table 1. Livestock performance using commercial probiotic (*Probac*) at various levels

	P0	P1	P2	P3
Body weight (kg)	1.68± $^{0.15a}$	1.7±0.26 ^{a}	1.73±0.17^{ab}	1.71±0.11 ^{ab}
Feed conversion	2.08± 0.1	2.02± 0.12	2± 0.1	2.01± 0.13
Mortalty %	4,4	3	0	3

Note: different a-b notations on the same line show differences in $p<0.05$

3.1 Body Weight

The use of commercial probiotics (*Probac*) on the body weight performance of local Peking ducks is shown in the following graph:

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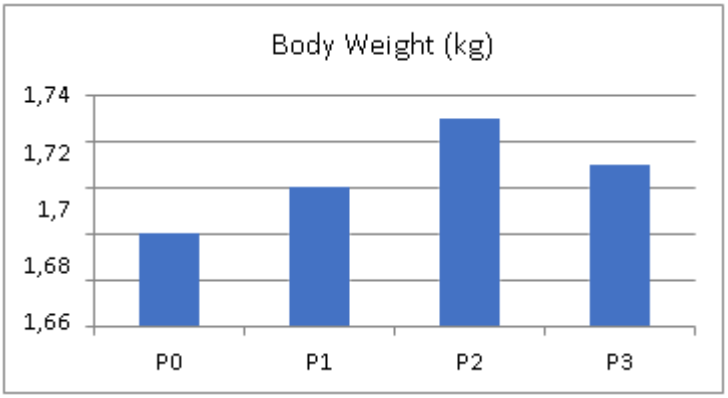

Figure 1. Graph of average body weight of local Peking ducks using commercial probiotics at different levels

Peking ducks with the use of commercial probiotics (*Probac*) at different feed levels affected the body weight of local Peking ducks $p<0.05$. The performance of the use of these probiotics gave the best results successively from P2 with a result of 1.73 kg, followed by P3, P1 and P0 with results of 1.71 kg, 1.7 kg and 1.68 kg. The results of maintenance using commercial probiotics (Probac) were higher than the study by Muthmainah and Jalali (2022) with body weights of 1.28 – 1.75 kg at 6 weeks of age.

The use of probiotics in the P2 treatment (2g/kg of feed) gave the best results possible due to the microbes contained in commercial probiotics (probac) in sufficient quantities to suppress pathogenic bacteria in the digestive tract, especially in the small intestine which is in line with research (Vila et al., 2010). The main bacteria found in commercial probiotics (*Probac*), namely *Bacillus lichenifomis* and *Bacillus subtilis with an amount of* $2x10^{7}$ CFU/g each, are able to suppress pathogenic bacteria such as using a level of 2gr/kg of feed. According to research by Soeka et al. (2011) *Bacillus licheniformis* bacteria are able to produce protease enzymes that are able to break down protein bonds into peptides and amino acids so that the digestibility of protein in feed is more efficient so that it will have an impact on more optimal body weight gain.

3.2 Feed conversion

The use of commercial probiotics (*Probac)* in the conversion of local Peking duck feed is shown in the following graph:

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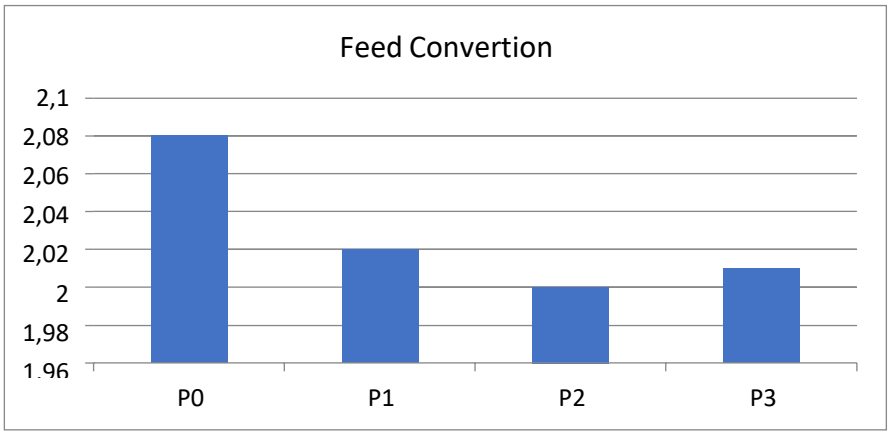

Figure 2. Feed conversion graph on the use of commercial probiotics (*Probac*) at different levels

The use of conventional probiotics (*Probac*) in local Peking ducks had no effect on feed conversion $p<0.05$. The best results from the use of commercial probiotics *(Probac*) were P2 (2g/kg feed) with a feed conversion of 2 and followed by P3, P1 and P0 with conversions of 2.01, 2.02 and 2.08. There is no effect on feed conversion because the feed requirements are relatively the same in raising local broiler ducks. The smaller the feed conversion, the more efficient the feed needed in maintenance (Satyaningtijas et al. 2015).

Feed conversion is influenced, among others, by microbial conditions in the small intestine of livestock where the use of probiotics can suppress the activity of pathogenic bacteria and maximize the process of feed digestion (Setyawati, Adiputra and Hudaidah 2013). The use of commercial probiotics (*Probac*) with the microbial types Bacillus lichenifomis and Bacillus subtilis was able to suppress the growth of pathogenic microbes thereby reducing the value of feed conversion which was in accordance with the opinion of Barrera, et al. (2021) that probiotic bacteria from the genus Bacillus will interact with the host to form extra cellular traps (*MET*) eliminating pathogenic microbes as a form of immune response.

3.3 Mortality

The use of commercial probiotics (*Probac)* on local Peking duck mortality is shown in the following graph:

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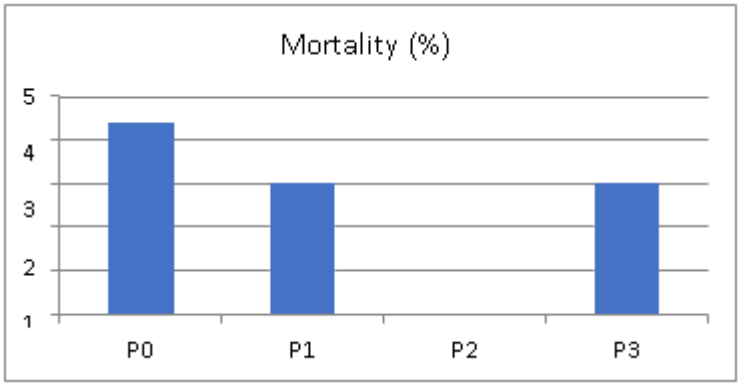

Figure 3. Graph of mortality using commercial probiotics (probac) at various levels

The results showed that the mortality at P2 was 0%, the lowest compared to P0 (4.4 % mortality); P1 (3% mortality); and P3 (3% mortality). Mortality of treatment P1 (mixed feed with probiotics 1 g/kg of feed) was lower than mortality in P0 (mixed feed without probiotics). Then the mortality of local Peking ducks given P2 treatment (mixed feed with probiotics 2 g/kg of feed) was lower than that of local Peking ducks given P1 treatment. These results indicate that probiotics in mixed feed can reduce the mortality of local Peking ducks. This is supported by the statement of Lokapirnasari et. al. (2022) who stated that the addition of probiotics containing *L. acidophilus, L. casei, L. lactis,* and *Bifidobacterium spp and Moringa oleifera* extract showed 0% mortality in each treatment. Djouvinov et. al. (2005) also stated that *Lactina* probiotics containing *L. bulgaricus, L. helveticus, L. acidophilus, L. lactis, Enterococcus faecium,* and *Streptococcus thermophilus* in mule ducks can reduce mortality. Ramlucken et. al. (2020) also stated that *B. Subtilis* bacteria was given to broilers can reduce mortality.

Probiotics can be used to treat intestinal infections caused by pathogenic bacteria (Park et. al. 2016). *Bacillus spp*. are gram-positive bacteria that can germinate in the digestive tract. Germination causes active vegetative cells to appear so that probiotics from *Bacillus* can exert their effects through mechanisms involved in vegetative cell metabolism (Tactacan et. al., 2013). Teo and Tan (2005) also stated that *B. subtilis* (PB6) can fight the pathogen *Colostridium spp*. However, in treatment P3 (mixed feed with 3 g/1 kg of feed) showed an increase in mortality from P2. This is not in line with the research by Tactacan et. al. (2013) where the probiotic *B. subtilis* QST 713 10x10 ^{6} CFU/g gave a lower mortality rate compared to the use of *B. subtilis* QST 713 10x10 ^{5} CFU/g. The high mortality from the P3 treatment compared to the P2 treatment could be caused by the dose of bacteria in the probiotics, the population of bacteria in the digestive organs, and environmental heat stress. This is in accordance with the opinion of Musa et. al. (2009) which states that the efficiency of probiotics depends on the dose of probiotics given, the

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types of microbes in the probiotics, the types of bacteria present in the gut, the type of basal feed used for feed formulations, stress conditions in livestock.

4. CONCLUSION

The use of commercial probiotics (*Probac*) with P2 levels (2g/kg feed) gave the best results in terms of body weight, feed conversion and mortality in local Peking ducks

5. SUGGESTION .

It is advisable to do a proximate test on mixed feed

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