The Effect Of Typhonium Flagelliforme Leaf Meal On The Growth Quality Of Pekin Ducks

Andhika Putra[1]*, Gunawan [2], Tengku Gilang Pradana [3]
Universitas Pembangunan Panca Budi[1,2]
Universitas Negeri Medan[3]

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***Correspondence Address:**
andhikaputra@dosen.pancabudi.ac.id

Abstract: This study aims to analyze the effectiveness of using Typhonium flagelliforme leaf meal as an alternative feed for Pekin ducks. The primary challenge addressed in this study is the limited availability of high-quality, sustainable feed for Pekin ducks. The method used in this research was a Completely Randomized Design (CRD) with four treatments: P0 (100% standard feed), P1 (95% feed + 5% Typhonium flagelliforme leaf meal), P2 (90% feed + 10% Typhonium flagelliforme leaf meal), and P3 (85% feed + 15% Typhonium flagelliforme leaf meal), with five replications per treatment. The observed parameters included feed consumption, weight gain, and feed conversion ratio. The results showed that the use of Typhonium flagelliforme leaf meal significantly affected all three parameters. Treatment P2 produced the best results in terms of feed consumption, weight gain, and feed efficiency. The conclusion suggests that adding 10% Typhonium flagelliforme leaf meal to the feed can enhance the performance of Pekin ducks. Further studies are recommended to evaluate different feed combinations.

INTRODUCTION

The productivity of poultry, particularly Pekin ducks, largely depends on the quality and availability of adequate feed. Wahju (2004) emphasized that high-quality feed not only ensures optimal growth but also affects the health and productivity efficiency of livestock. Pekin ducks (Anas platyrhynchos domesticus), recognized as a leading meat duck breed, demonstrate high productivity levels with a relatively short rearing period (Santosa & Priyanto, 2019). Under optimal conditions, Pekin ducks can reach market weight in approximately 45 days, making them a popular choice for farmers and consumers (Astuti & Darmanto, 2018). Additionally, market demand for Pekin duck meat continues to grow due to its superior texture and nutritional value compared to local duck meat (Sari & Nugroho, 2020).

However, one of the main challenges in developing Pekin duck farming is the

availability of high-quality, sustainable feed. Widodo and Yulianto (2017) identified that the scarcity of continuous quality feed often hinders productivity improvements in meat duck production. Feed plays a critical role in supporting the growth and productivity of Pekin ducks, with Rasyaf (2007) asserting that feed is the primary factor influencing overall poultry productivity performance. The rising costs of conventional feed ingredients, such as corn and fish meal, have driven farmers to seek more economical feed alternatives that still maintain production quality (Herdiana et al., 2014).

In this context, Typhonium flagelliforme leaf meal has been introduced as an alternative feed ingredient with the potential to meet the nutritional needs of Pekin ducks at a more efficient cost (Supriyadi & Mulyani, 2021). Typhonium flagelliforme leaf meal contains sufficient nutrients to support poultry growth and has bioactive components that can enhance feed intake and feed conversion efficiency (Essai, 1986; Syahid, 2007).

This study aims to evaluate the effectiveness of using Typhonium flagelliforme leaf meal in the diet of Pekin ducks. Research by Nurhayati and Santoso (2016) also demonstrated that Typhonium flagelliforme leaf meal plays a significant role in increasing feed intake and weight gain in ducks. By considering aspects of feed intake, weight gain, and feed conversion, this study aims to provide insights into the potential of Typhonium flagelliforme leaves as an alternative feed. According to Agus and Sartono (2013) and Lestari (2005), these three parameters are essential in assessing the effectiveness of an alternative feed ingredient. This study's findings are also expected to serve as a reference for farmers in optimizing feed efficiency to enhance livestock performance and reduce production costs, in line with Kartadisastra's (2007) recommendations on the importance of alternative feeds for cost efficiency.

RESEARCH METHODS

This research was conducted in Dusun VI Sei Cabang Kiri, Kepala Sungai Village, Secanggang District, from January to March 2020. The study used a Completely Randomized Design (CRD) with a non-factorial approach, consisting of four treatments and five replications. The treatments included four levels of substitution of Typhonium flagelliforme leaf meal in the Pekin duck diet: P0 = 100% feed (control),

P1 = 95% feed + 5% Typhonium flagelliforme leaf meal, P2 = 90% feed + 10% Typhonium flagelliforme leaf meal, and P3 = 85% feed + 15% Typhonium flagelliforme leaf meal.

Materials and Equipment

This study used 100 Pekin ducks, divided into four treatment groups. The primary feed ingredients included corn, rice bran, palm kernel meal, fish meal, and Typhonium flagelliforme leaf meal. Typhonium flagelliforme leaf meal was chosen as an alternative feed ingredient due to its nutrient content that can support poultry growth and reduce feed costs (Essai, 1986; Syahid, 2007). The equipment used in this research included weighing scales, feeding troughs, and water containers.

Feed Ration Preparation

The feed rations in this study were prepared based on the nutritional requirements of Pekin ducks for the starter and finisher phases. According to Herdiana et al. (2014), poultry feed formulation should include carbohydrates, protein, fat, vitamins, and minerals in appropriate proportions to support optimal growth. In this study, the nutritional composition for each treatment was adjusted to meet the needs of Pekin ducks, with details as follows:

Starter Phase

Bahan Pakan	**P0 (Kontrol)**	**P1**	**P2**	**P3**
Corn	25%	21%	15%	15%
Rice Bran	27%	26%	31%	27%
Palm Kernel Meal	18%	20%	17%	17%
Fish Meal	28%	26%	25%	24%
Typhonium flagelliforme Leaf Meal	0%	5%	10%	15%
oil	1%	1%	1%	1%
Top Mix	1%	1%	1%	1%
Total	100%	100%	100%	100%
Energi (kkal/kg)	2901	2856	2856	2872
Crude Protein (%)	22.09	21.83	21.87	21.79

Fase Finisher

Bahan Pakan	P0 (Kontrol)	P1	P2	P3
Corn	33%	32%	20%	19%
Rice Bran	42.5%	40%	38%	39%
Palm Kernel Meal	9.8%	9%	17%	13%
Fish Meal	12.5%	12%	10%	10%
Typhonium flagelliforme Leaf Meal	0%	5%	10%	15%
oil	1.2%	1%	1%	1%
Top Mix	1%	1%	4%	3%
Total	100%	100%	100%	100%
Energi (kkal/kg)	2973	2981	2980	2980
Crude Protein (%)	15.65	15.80	15.64	15.98

Observed Parameters

The parameters observed in this study are as follows:

- **Feed Intake**: Feed intake was calculated based on the difference between the amount of feed given and the remaining feed each day. According to Wahju (2004), feed intake is an important factor in evaluating feed effectiveness as it reflects palatability and digestibility.
- **Weight Gain**: Measurements were conducted by weighing each duck at the beginning and end of the study to determine daily weight gain. According to Soeparno (2007), body weight is a key indicator of growth and livestock health, influenced by feed consumption and nutritional quality.
- **Feed Conversion Ratio**: Feed conversion was calculated by comparing the amount of feed consumed with the weight gain over the study period. Rasyaf (2007) mentions that a lower feed conversion ratio indicates better feed efficiency, as the feed consumed is more optimally utilized to increase livestock weight.

Data Analysis

The collected data were analyzed using Analysis of Variance (ANOVA) to determine the effect of treatments on the observed parameters. If significant differences were found in the analysis results, further testing was conducted using Duncan's Multiple

Range Test at a 5% significance level to identify significant differences between treatments.

Referring to existing literature, this study is expected to contribute to providing effective and efficient alternative feed options for poultry, particularly Pekin ducks, which can enhance productivity and reduce production costs for farmers.

1. **Materials and Equipment**

   This study used 100 Pekin ducks, divided into four treatment groups. The main feed ingredients included corn, rice bran, palm kernel meal, fish meal, and Typhonium flagelliforme leaf meal. The equipment used in this study included weighing scales, feeding troughs, and water containers.

2. **Feed Ration Preparation**

   The feed rations in this study were prepared based on the nutritional needs of Pekin ducks for the starter and finisher phases. Each treatment was adjusted according to the substitution levels of Typhonium flagelliforme leaf meal as an additional feed ingredient, with the feed formulation outlined in a table of nutritional composition and energy requirements according to Pekin duck standards.

3. **Observed Parameters**

   The parameters observed in this study are as follows:

   Feed Intake: Calculated based on the difference between the amount of feed provided and the remaining feed each day.

   Weight Gain: Measurements were conducted by weighing each duck at the beginning and end of the study to determine daily weight gain.

   Feed Conversion Ratio: Calculated by comparing the amount of feed consumed with the weight gain over the study period.

4. **Data Analysis**

   The collected data were analyzed using Analysis of Variance (ANOVA) to determine the effect of treatments on the observed parameters. If significant differences were found, further testing was conducted using Duncan's Multiple Range Test at a 5% significance level to identify significant differences between treatments.

RESULTS AND DISCUSSION

Research Results

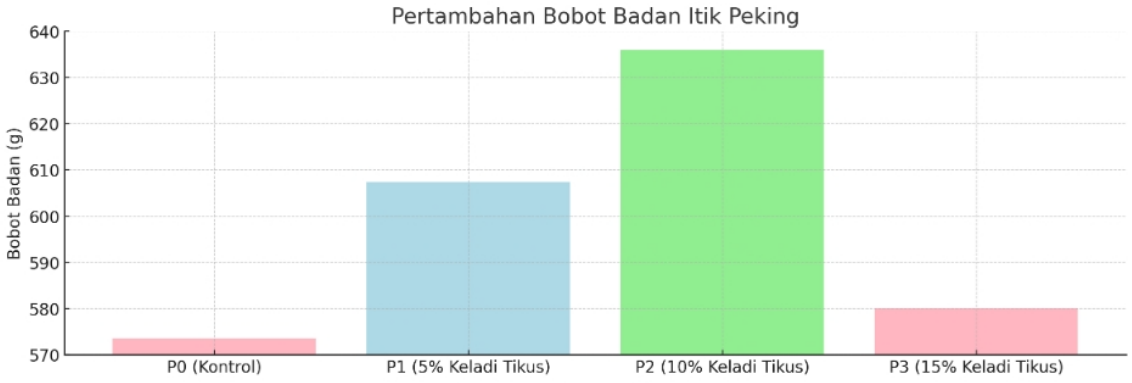
This study observed three main parameters: feed intake, weight gain, and feed conversion ratio in Pekin ducks fed a diet supplemented with Typhonium flagelliforme leaf meal. The findings for each parameter are summarized as follows:

Feed Intake

The highest average feed intake was achieved in the P2 treatment (90% feed + 10% Typhonium flagelliforme leaf meal) at 467.89 grams per 60 days, while the lowest feed intake was recorded in the P0 (control) treatment at 456.29 grams per 60 days. Statistical analysis showed that the addition of Typhonium flagelliforme leaf meal had a significant effect ($P<0.05$) on feed intake. The increase in feed intake observed in the P2 treatment suggests that Typhonium flagelliforme leaf meal was able to enhance the palatability of the diet, leading to increased feed consumption in the ducks.

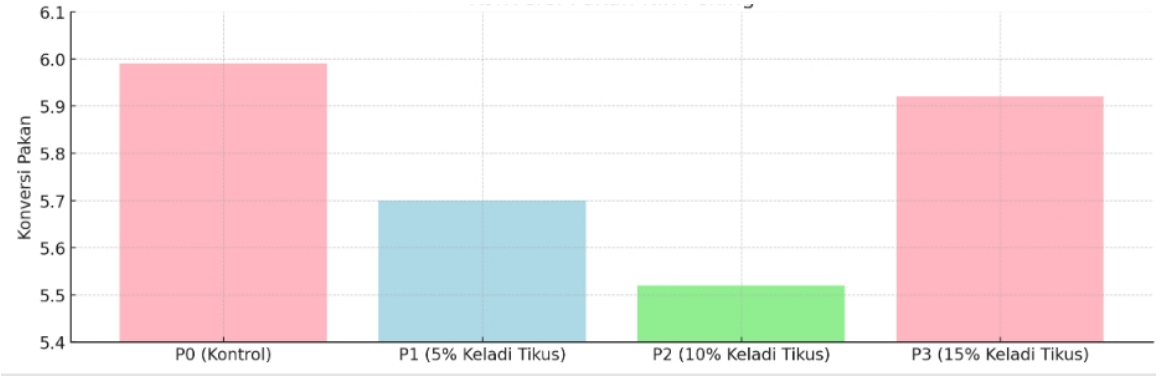
Weight Gain

The highest weight gain was also achieved in the P2 treatment, with an average of 635.87 grams over 60 days, while the lowest weight gain was observed in the P0 treatment, with an average of 573.57 grams over 60 days. Statistical analysis showed a significant difference ($P<0.05$) between the P2 treatment and the other treatments. The P2 treatment resulted in optimal weight gain, likely due to the high level of feed intake enriched with the more complete nutrients provided by Typhonium flagelliforme leaf meal.



Feed Conversion

The best or lowest feed conversion ratio was obtained in the P2 treatment, at 5.52, indicating that this treatment was the most efficient in utilizing feed for weight gain. Conversely, the P0 treatment showed the highest feed conversion ratio, at 5.99, indicating lower feed efficiency. Analysis of variance results showed a significant difference ($P<0.05$) between the P2 treatment and the other treatments in terms of feed conversion ratio.



DISCUSSION

Feed Intake

The increase in feed intake in the P2 treatment (90% feed + 10% Typhonium flagelliforme leaf meal) indicates that Typhonium flagelliforme leaf meal has a positive effect on feed palatability. The addition of Typhonium flagelliforme leaf meal enhanced the feed's appeal, leading to higher consumption by Pekin ducks. Kartadisastra (2007) explained that palatability is one of the main factors influencing livestock feed intake, as high palatability encourages animals to consume more. Moreover, Agus and Sartono (2013) stated that feed with a balanced nutritional

composition and high palatability will generally increase overall feed intake in livestock.

In this study, the highest feed intake was recorded in the P2 treatment (467.89 grams per 60 days) compared to other treatments, indicating that the addition of Typhonium flagelliforme leaf meal at a 10% level successfully achieved an optimal balance between nutrition and animal appetite. The high intake level in this treatment was due to the enhanced palatability of the feed, which encouraged the ducks to consume more to meet their nutritional needs. Typhonium flagelliforme leaf meal also contains saponin and flavonoid compounds, which are known to act as appetite stimulants and support metabolism (Syahid, 2007), thereby contributing to the increased feed intake.

Weight Gain

The highest weight gain was also observed in the P2 treatment, reaching an average of 635.87 grams over 60 days. According to Soeparno (2007), livestock body weight is significantly influenced by the amount of nutrients absorbed through feed intake. The more feed consumed, the more nutrients are available for growth and tissue formation. High feed intake in the P2 treatment resulted in optimal weight gain due to the increased level of nutrients absorbed by the Pekin ducks.

The results of this study also align with Wahju's (2004) opinion that feed with an appropriate and high-quality nutritional composition will optimally support livestock body growth. The addition of Typhonium flagelliforme leaf meal in the feed is also known to provide a sufficiently high level of crude protein (18.12%) (Essai, 1986), which is necessary for tissue synthesis and thus supports the ducks' weight gain. Additionally, the saponin content in Typhonium flagelliforme aids in nutrient absorption in the digestive tract (Syahid, 2007), allowing the nutrients to be utilized more efficiently for growth.

In the P2 treatment, higher feed intake and better nutrient absorption contributed to increased weight gain in Pekin ducks. This also indicates that the alternative feed based on Typhonium flagelliforme leaf meal can provide essential nutrients needed to support growth, especially protein and energy, which are important in poultry development.

Feed Conversion

The lowest feed conversion ratio was also observed in the P2 treatment, at 5.52, indicating that the addition of 10% Typhonium flagelliforme leaf meal in the feed resulted in the highest feed efficiency. Rasyaf (2007) explained that feed conversion is the ratio between the amount of feed consumed and the resulting body weight. A lower feed conversion ratio indicates higher efficiency, as less feed is required to achieve weight gain.

In this case, the P2 treatment showed a better feed conversion ratio than the other treatments because the nutrients in Typhonium flagelliforme leaf meal helped enhance the digestive efficiency of the Pekin ducks. According to Lestari (2005), efficient feed conversion is achieved when the feed contains the appropriate nutritional components, such as protein, fat, and energy, that support growth. The balanced protein and fiber content in the feed containing 10% Typhonium flagelliforme leaf meal (P2) allows the feed to be digested and absorbed more optimally by the animals, enabling the feed consumed to be converted into body weight more efficiently.

Moreover, Herdiana et al. (2014) stated that standardized local feed ingredients, such as Typhonium flagelliforme leaf meal, can support feed efficiency and produce results comparable to or even better than commercial feed. The optimal feed conversion ratio in the P2 treatment also indicates that this alternative feed can improve productivity at a more economical cost, which is highly beneficial for farmers in reducing production costs.

CONCLUSION

The results of this study indicate that the use of Typhonium flagelliforme leaf meal in the diet of Pekin ducks has a positive effect on feed intake, weight gain, and feed conversion efficiency. The P2 treatment, with the addition of 10% Typhonium flagelliforme leaf meal in the diet, produced the best results across all observed parameters, likely due to its balanced nutritional composition and high palatability. Typhonium flagelliforme leaf meal serves not only as an alternative feed ingredient but also as a source of nutrients that can enhance overall feed performance.

Therefore, Typhonium flagelliforme leaf meal can be recommended as an effective alternative feed ingredient for Pekin ducks, particularly at a 10% substitution

level in the diet. These findings are expected to contribute to poultry farming development with more efficient production costs and optimal results.

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