

## Effect giving leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* on the performance of bali duck male

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### Abstract

Bali duck has the potential to be a provider of meat to meet food needs, but is still constrained by the low growth rate of bali ducks as meat producers in terms of quality and quantity. This study aims to determine the effect of giving leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* on the performance of bali ducks male. The experimental design used a completely randomized design (CRD) with four treatments and five replications and each treatment unit was with 3 ducks, so that were used 60 bali duck male. Treatment leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* through drinking water: 0% *Asystasia gangetica* leaf extract (A); 2% *Asystasia gangetica* leaf extract (B); 4% *Asystasia gangetica* leaf extract (C); and 6% *Asystasia gangetica* leaf extract (D). The variables observed were initial body weight, feed consumption, drinking water consumption, final body weight, weight gain, and FCR. The results showed that feed consumption, final body weight, weight gain, and FCR of bali ducks male giving leaf extract *Asystasia gangetica* was not able to improve duck performance, but giving 4-6% could reduce duck drinking water consumption. It can be concluded that the administration leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* through drinking water has not been able to improve duck performance, administration of 4-6% can reduce drinking water consumption of bali duck male.

**Keywords:** *Asystasia gangetica*; Bali Duck Male; Extract Water; Performance; Weight Gain

### 1. Introduction

Ducks have high potential to be developed as a food provider of animal protein sources. Constraints in duck farming, especially in traditional maintenance, are often found in livestock health problems. Ducks are susceptible to death caused by environmental influences such as weather, cage conditions and feed. Another obstacle is that the duck meat produced has a distinctive odor (fishy) and a tough texture, so that duck meat consumption by consumers decreases. Efforts that can be made to maintain livestock health and provide meat that consumers are interested in can be done by providing green *Asystasia gangetica* (L) subsp. *Micrantha*. The leaves of this plant can be made into an extract and given to livestock through drinking water to maintain the health and performance of ducks.

*Asystasia gangetica* (L) subsp. *Micrantha* is plants that have the potential to be a source of green fodder, easily found in yards, roadsides, gardens, and open fields [3]. *Asystasia gangetica* (L) subsp. *Micrantha* can grow well under banana trees with crude protein content (27.27%); crude fiber (17.66%); and dry weight production of 16.66 g/m<sup>2</sup> [15]. The potential of *Asystasia gangetica* (L) subsp. *Micrantha* as a feed source is also supported by the phytochemical content naturally found in plants: alkaloids, flavonoids, phenols, saponins, tannins, vitamin C and  $\beta$ -carotene [14]. Flavonoid compounds act as antibacterials that can increase the efficiency of feed digestion [5]. Good absorption of feed nutrients will increase the live weight of livestock.

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The fastest growth of ducks occurs in the starter phase and then decreases when they are adults [8]. Gender factors also affect duck growth. Bali duck male that are kept for 2 months with a ration consumption of 160 g/day, body weight reaches 1.3-1.5 kg, while female ducks with a feed consumption of 220 g/day, body weight 0.6-1 kg [1]. Furthermore, duck meat contains protein (23.4%), fat (11.2%), and energy content (21,000 kcal/kg). Research on the use of *Asystasia gangetica* flour starting from the 5-15% level shows that the performance of bali ducks is no different from ducks without being given *Asystasia gangetica* flour [15].

Based on the description above, it is important to conduct research on the effect leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* given through drinking water on the performance of bali duck male.

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## 2. Material and methods

This research was conducted in Tabanan Regency, lasting 8 weeks, were colony battery cages. The ducks used in this study were bali duck male aged 1 day and there are 60 bali duck male. The feed given was commercial feed produced by PT Charoen Phokphand Indonesia, Tbk. (Code CP 511 B). The *Asystasia gangetica* plants used were taken from local plantations, while the leaves used were leaves that had fully bloomed and were green in color. Provision of drinking water sourced from the regional drinking water company mixed with leaf extract *Asystasia gangetica* according to treatment. Feed and drinking water were provided *adlibitum*.

The experimental design used in this study was a completely randomized design (CRD) with 4 treatments and 5 replications. Each treatment unit used 3 bali duck male. The treatment leaf water extract of *Asystasia gangetica* through drinking water was as follows: 0% *Asystasia gangetica* leaf extract (A); 2% *Asystasia gangetica* leaf extract (B); 4% *Asystasia gangetica* leaf extract (C); and 6% *Asystasia gangetica* leaf extract (D).

### 2.1. The Process of Making Leaf Extract *Asystasia gangetica*

The ratio in making the leaf extract of *Asystasia gangetica*: 1 kg of *Asystasia gangetica* leaves: 1 liter of water (1:1). Furthermore, the leaf extract *Asystasia gangetica* is mixed with drinking water and given to ducks according to treatment. The administration leaf extract of *Asystasia gangetica* in treatments A, B, C, and D is respectively: 0%, 2%, 4%, and 6% of the volume of drinking water. For treatment B (2%) required 980 ml of water and 20 ml of *Asystasia gangetica* leaf extract; for treatment C (4%) required 960 ml of water and 40 ml of *Asystasia gangetica* leaf extract; and for treatment D (6%) required 940 ml of water and 60 ml of *Asystasia gangetica* leaf extract.

### 2.2. Observed Variables

The variables observed in this study were: initial body weight (g), final body weight (g), body weight gain (g), feed consumption (g), drinking water consumption (ml), and feed conversion ratio (FCR).

### 2.3. Data Analysis

The data obtained was analyzed using variance. If there is a significant difference ( $P < 0.05$ ) between treatments, then proceed with Duncan's multiple range test [10].

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## 3. Results and discussion

The administration leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* through drinking water has not been able to improve duck performance (final body weight, weight gain, ration consumption, and FCR) except for a decrease in drinking water consumption along with the increase in the administration leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* (Table 1). This shows that the administration 2-6% of *Asystasia gangetica* (L) subsp. *Micrantha* leaf extract through drinking water has not been able to improve duck growth. The content of phytochemical compounds in *Asystasia gangetica* extract such as flavonoids, phenols, saponins, tannins, and vitamin C, only function to maintain duck health and prevent the emergence of diseases due to oxidation of free radical contaminants from feed and the environment. The administration 3% of papaya leaf extract in drinking water has not been able to improve duck appearance, but it can increase the percentage of carcass meat, reduce subcutaneous fat including carcass skin, and abdominal fat in meat [9].

**Table 1** The effect of administering leaf extract of *Asystasia gangetica* (L) subsp. *Micratha* through drinking water on the performance of 8-week-old bali duck male

Variable	Treatment <sup>1)</sup>				SEM <sup>3)</sup>
	A	B	C	D	
Initial body weight (g/head)	46.60 <sup>a</sup>	46.60 <sup>a</sup>	47.00 <sup>a</sup>	47.00 <sup>a</sup>	0.17
Feed consumption (g/head/8 weeks)	4639,80 <sup>a</sup>	4589,60 <sup>a</sup>	4574,40 <sup>a</sup>	4546,40 <sup>a</sup>	34.93
Drinking water consumption (ml/ head/8 weeks)	21238,66 <sup>a2)</sup>	20845,26 <sup>a</sup>	20278,40 <sup>b</sup>	20244,26 <sup>b</sup>	177.90
Final body weight (g/ head/8 weeks)	1268 <sup>a</sup>	1287 <sup>a</sup>	1316 <sup>a</sup>	1349 <sup>a</sup>	26.42
Body weight gain (g/ head/8 weeks)	1221,40 <sup>a</sup>	1240,40 <sup>a</sup>	1296,00 <sup>a</sup>	1302,00 <sup>a</sup>	26.51
FCR	3.76 <sup>a</sup>	3.67 <sup>a</sup>	3.60 <sup>a</sup>	3.56 <sup>a</sup>	0.08

Information: A: 0% *Asystasia gangetica* leaf extract B: 2% *Asystasia gangetica* leaf extract C: 4% *Asystasia gangetica* leaf extract D: 6% *Asystasia gangetica* leaf extract Values with different letters on the same line have significantly different meanings (P<0.05) SEM: "Standard error of the treatment means".

Duck ration consumption gave no different results in all treatments, so that the final body weight and weight gain also gave no different results. The increase in body weight gain was greatly influenced by ration consumption and the content of nutrients such as energy and protein contained in the ration. The nutrient content of the ration in the four treatments was the same, using commercial ration code CP 511 B, so that the ducks utilized the same nutrient source to support growth. Basically, livestock eat to meet energy needs and livestock will stop eating when energy needs are met. The higher the level of protein content consumed by livestock, the greater the response that can be shown by livestock in the form of daily weight gain [6]. Body weight gain is also influenced by genetic and non-genetic factors. Non-genetic factors include the nutrient content of feed consumed by livestock, environmental temperature, air conditions in the cage, and livestock health [7]. Stated that even though ration consumption is low, if nutritional needs have been met, it will not affect body weight, because the nutrient metabolism process takes place smoothly and in balance [2]. Ration consumption is more significantly influenced by the composition and condition of the ration given [11]. Stated that supplementation of fermented papaya leaf juice at a level of 8-16% in commercial rations did not affect ration consumption, final body weight, weight gain, and meat weight in carcasses, but could reduce the FCR value of native chickens [13].

The feed conversion value (FCR) in this study ranged from 3.56-3.67 (Table 1). The FCR value is influenced by the amount of ration consumption and the increase in livestock weight gain. Factors that influence FCR are genetics, age, body weight, level of ration consumption, body weight gain, palatability, and hormones. The less livestock consumes rations and is supported by increased body weight gain will result in a low FCR. The low FCR value indicates that livestock are more efficient in utilizing rations to produce a weight gain of 1 kg. A high FCR value indicates that livestock need a lot of rations to increase weight per unit weight [4].

The decrease in drinking water consumption in this study was due to the role of phytochemical compounds in *Asystasia gangetica* (L) subsp. *Micrantha* which can support healthy livestock growth. Stated that drinking water consumption in poultry is greatly influenced by livestock activity, environmental temperature, type and amount rations, livestock body size, and livestock growth phase. Environmental temperature has a very close influence on drinking water consumption because livestock will consume a lot of drinking water if the environmental temperature is hot and vice versa if the environmental temperature is cold, livestock will not consume much drinking water, but livestock will consume a lot of rations to maintain normal body temperature. The giving papaya leaf extract as much as 0.5 to 2.5% in drinking water has no effect on drinking water consumption [12].

#### 4. Conclusion

Based on the results of this study, it can be concluded that the administration 2 - 6% leaf extract of *Asystasia gangetica* (L) subsp. *Micrantha* through drinking water has not been able to increase the growth of bali duck male, and at a level of 4 - 6% it can reduce drinking water consumption.

#### Compliance with ethical standards

##### Disclosure of conflict of interest

No conflict of interest to be disclosed.

### Statement of ethical approval

The Animal Ethics Commission has approved 60 one-day-old ducks used in this research from the Faculty of Veterinary Medicine, Udayana University, Badung, Bali, Indonesia.

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