The Effects of Leubiem Fish Waste (*Chanthidermis Maculatus*) As Protein Source in Rations on The Performance of Male Alabio Ducks

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Abstract

The aim of this study is to determine the effect of leubiem fish waste (Chanthidermis Maculatus) as a source of protein in rations on the performance of male Alabio duck. The study used of 96 male Alabio ducks, 9-14 weeks old, grower phase. The duckss were placed allocated into 4 treatments and 4 replications (6 ducks/pen). The male Alabio ducks was fed ration contained 17-18 % crude protein and 2700 kkal/kg metabolizable energy. The design experiment used was completely randomized design with 4 treatment rations: R0 (control / 0% leubiem fish waste), R1 (basal diet containing 10% leubiem fish skin flour leubiem), R2 (basal diet containing 10% leubiem fish head flour leubiem) and R3 (basal diet containing 10% leubiem fish bone flour leubiem). The observed variables were: feed consumption, body weight gain, final body weight, feed conversion, and mortality of male Alabio duck. Data was analiyzed by Anova and Duncan test. The results showed that the use of leubiem fish waste gave a positive response to the performance of male Alabio duck. The use of leubiem fish waste (skin flour, head and bone) in ration significantly aeffect (P<0,05) on feed consumption, body weight gain, and final body weight, compared to control treatment, but no significant effect on ration conversion and mortality male Alabio duck grower phase. It was concluded that the use of leubiem fish waste (skin flour 10%) could serve as a source of protein in duck ration and able to increase body weight gain, and final body weight of male Alabio duck.

Key words: Leubiem Fish Waste, Alabio Ducks, Rations, Performances

Introduction

Leubiem fish (*Chanthidermis maculatus*) is one of the jebong or goat fish family which is one of the fish species found in the Indo-Pacific or Red Sea and Africa region to Southeast Asia, north of Japan and south to north of Australia and east west Atlantic. *Chanthidermis maculatus* or better known in theto people of Aceh with the title ofas *leubiem fish*. It wasis commonly found on the coast of Thailand, Indonesia, Philippines and Japan (Zarry *et al*. 2017). Protein content of leubiem fish waste is was quite high, ranging from 46.08 to 66.2%, and it was higher than the crude protein content of fish meal in which generally that iscontained 53.7% (Nikijuluw, 2010). Utilization of the fish Waste processing waste of fish can wellwill give a doublemany advantages, in the utilization of fish waste such as as a source of protein in , especially as a component of animal feed ration, and can reduces environmental pollution, . In addition to being a good source of protein and amino acids, fish waste is also a and sources of minerals in animal ration such as, phosphorus, calcium and vitamins for livestock.

One of the fish waste which have high protein, mineral, phosphor and calcium source is Leubiem fish waste (*Chanthidermis maculatus*) which can be utilized as duck feed ingredients. Utilization of fish waste is one alternative to reduce the cost of ration in the of ducks business (Gombo *et al*. 2015). Fish waste which of consisting of head, stomach the contents of gastro-intestinal tract, meat, and bone, if it is given fed directly freshly, it may harmful to the livestock. can cause negative effects It needs to be processed prior to feeding

~~that needs to be done first~~ (Nunung 2012). ~~Fish waste of that are p~~Processing~~ed~~ fish waste does not only ~~in addition to having~~ have high nutritional value but also

~~can also~~ provide a distinctive taste and aroma, have high digestibility and available amino acid ~~content available for the better~~ (Abun *et al.* 2004). One of ~~way that can be done to utilize the waste is by~~ processing technique that can be applied is ~~it into~~ fish meal making (Widyasari *et al.* 2013). Baye *et al.* (2015) reported that ~~the provision~~utilization of fish waste flour in poultry ration ~~can~~ increased feed consumption and body weight gain. The purpose of this study ~~is~~ was to determine the effect of leubiem fish waste as a source of protein in rations on the performance of male Alabio duck.

Materials and Methods

The research ~~material~~ used ~~is~~ 96 male Alabio ducks at grower phase. ~~and~~ Ration used in this experiment consisted of leubiem fish waste (skin, head, and bone) ~~and some other feed ingredients such as~~ corn, rice bran, coconut meal, soybean meal, sago, coconut oil, premix, NaCl, and DCP.

Treatment Rations

Treatment rations used were basal rations containing leubiem fish waste (skin, head and bone) formulated according to the grower phase duck requirements~~:~~. It contained 17-18 % crude protein and 2700 kkal/kg metabolizable energy (Table 1).

Table 1. Composition and nutrients content of the treatment ration

Feed Ingredients	Treatment Rations			
	R0	R1	R2	R3
	.....	%	.....	
Corn	38.5	40	37	37
Rice bran	17	18	18	18
Coconut meal	10	13.5	13	13
Soybean meal	24.3	7.5	12	10
Sago	7,2	8	7	9
Fish skin flour leubiem	0	10	0	0
Fish head flour leubiem	0	0	10	0
Fish bone flour leubiem	0	0	0	10
Coconut oil	1.5	1.5	1.5	1.5
Premix	0.5	0.5	0.5	0.5
NaCl~~I~~	0.5	0.5	0.5	0.5
DCP	0.5	0.5	0.5	0.5
Total	**100**	**100**	**100**	**100**
Calculated nutrients content:				
Metabolizable energy (Kcal/kg)	2702	2767	2706	2719
Crude protein (%)	18.02	18.12	18.08	18.15
Crude fiber (%)	5.92	6.66	6.55	6.95
Crude fat (%)	4.57	4.99	5.1	4.77
Ca (%)	0.28	1.09	1.36	1.07
P (%)	0.58	0.95	1.09	0.91

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Statistical Analysis

The study was conducted for 6 weeks (age 9 - 14 weeks). The design used was completely randomized design with 4 treatment rations and 4 replications: R0 (control / 0% leubiem fish waste), R1 (basal diet containing 10% fish skin flour leubiem), R2 (basal diet containing 10% fish head flour leubiem) and R3 (basal diet containing 10% fish bone flour

leubiem). The observed variables were: feed consumption, body weight gain, final body weight, feed conversion, and mortality of male Alabio duck. Data was analiyzed by Anova and Duncan test (Steel and Torrie 1993).

Results and Discussion

Rations Consumption

The average consumption of male alabio ducks ration during the study were in the range of 142.66 - 152.18 grams per head per day (Table 2). Wherein The lowest the amount of feed intake was obtained in from treatment R0 lowest (control/ 0% leubiem fish waste) and consumption the highest feed intake was found in treatment R3 (basal diet containing 10% fish bone flour leubiem). The data of male Alabio ducks performance obtained in this study are presented in Table 2.

Table 2. The performances of male Alabio ducks (9 - 14 weeks)

Parameters	Treatments			
	R0	R1	R2	R3
Ration consumption (g/h/day)	142.66±12.8^{a}	150.31±4.40^{ab}	148.32±7.16^{ab}	152.18±8.75^{b}
Body weight gain (g/h/day)	10,87±0,28^{a}	11,98±0,38^{b}	11,67±1,06^{b}	11,37±1,12^{b}
Final body weight (g)	1329,1±12,72^{a}	1389,1±17,34^{b}	1378,2±48,11^{b}	1372,3±50,69^{b}
Feed conversion ratio	4,4±0,37	4,6±0,15	4,5±0,05	4,7±0,25
Mortality (%)	0	0	0	0

Note: Different superscript in the same line means significantly different (P<0.05); R0 = 0% leubiem fish waste (control); R1= basal diet containing 10% leubiem fish skin flour leubiem; R2= basal diet containing 10% leubiem fish head flour leubiem; R3= basal diet containing 10% leubiem fish bone flour leubiem.

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The results showed that the use of leubiem fish waste (skin, head and bone) in ration formulation significantly affect (P<0.05) on the ration consumption of male alabio duck. An improvement ofd ration consumption was found in the male Alabio ducks fed 10% leubiem fish bone flour leubiem (R3), it was significantly different higher (P<0.05) in compared with to control ration (R0). Ration consumption in livestock can be influenced by various factors, one of the main factors according to Hernandez *et al.* (2004) is was the quality of feed including the nutrient content contained in the feed. Daud *et al.* (2013) found that ration consumption is was also strongly influenced by the palatability of the rations, types, and composition of feed ingredients used in duck ration formulation. In addition, the palatability of the ration is also influenced by the oleu of the ration itself (Alaily *et al.* 2011). This is caused by rations formulated with leubiem fish waste leubiem flour can gaive a fresh smell and can increased palatability of the rations. In addition, the high consumption of rations is was also influenced by the taste, shape and content of these dietary proteins. High consumption of rations will be followed by increasing of proteined consumption of protein to meet the needs of amino acids for these animals, and protein efficiency is was influenced by protein consumption (Liu *et al.* 2015; Varianti *et al.* 2017). Feed consumption can be influenced by various factors, including the nutrient contents in the feed and the level of energy content in the ration (Fan *et al.* 2008).

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Increasinged consumption of rations in of ration treatments containing leubiem fish waste (skin, head and bone) wais also thought to be caused by the effect of the ration color. The basic color of fish skin (R1), head flour (R2) and bone flour (R3) is rather yellowish and bright. This is in line

with Prayitno and Sugiharto (2015) statements ~~stating~~ which said that bright ~~the~~ color of ~~the bright~~ ration ~~will affect the~~ increased~~ing~~ consumption of the rations.

Body Weight Gain

The weight gain of Alabio male ducks (9-14 weeks) during the study ranged from 10.87-11.99 g/head/day (Table 2). The results of statistical analysis showed that the use of leubiem fish waste (skin, head and bone) in Alabio male duck ration formulation gave significant effect (P<0,05) ~~to~~ on weight gain. This result suggested~~s~~ that the use of leubiem fish waste in the dietary formulation as a protein source ~~may~~ increased the weight of ~~the~~ male Alabio duck. The increasing~~e~~ of livestock weight ~~is~~ was strongly influenced by the consumption of rations (Daud *et al*. 2017). Level of protein consumption ~~is~~was determined by the level of ration consumption.~~,~~ ~~because i~~the more~~f the ducks consume~~ rations consumed, ~~in~~ the ~~amount of~~ more ~~then the duck will consume more~~ protein consumed. It may resulting in excess of protein in the body (Alyandari *et al*. 2014).

Final Body Weight

The results showed that the final body weight of male Alabio ducks ranged from 1329 - 1389 g/head (Table 2). Rations containing leubiem fish waste had a significant effect (P<0.05) on final body weight of male Alabio ducks at 9-14 weeks. The highest ~~end~~ final weight was found in R1 treatment ~~that was~~(~~-~~1389,1 g/head) and the lowest ~~end~~ final weight was found in~~at~~ treatment R0 ~~that was~~(~~-~~1329,1 g/head). It can be seen that the use of 10% leubiem leather skin flour ~~can~~ increased duck's~~the relatively high~~ body weight relatively higher than other treatments~~, thus giving a real effect~~ (P <0.05) ~~to the final body weight of male Alabio ducks~~. Duck growth rate will be optimal if the genetic potential ~~it has~~ supported by feed proteins and energy contents that suits their needs (Dewanti *et al.* 2013).

Feed Conversion Ratio (FCR)

One of the variables used to see the ability of livestock to convert feed into meat-especially products is to look at the value of ~~the resulting~~ FCR. The lower the value of the ~~resulting~~ FCR~~, shows the value of feed consumption to increase the body weight is~~ the lower amount of feed needed to increase a unit of body weight (Apriliana Devi Anggraini *et al.* 2017). ~~The~~ FCR results showed that the use of leubim fish waste in Alabio duck feed formation for male grower stage during 9-14 weeks had no significant effect on ration conversion (Table 2).

This finding suggested~~s~~ that the use of leubiem fish waste in the grower Alabio duck ration ~~feed formulation of growner growers for 9-14 weeks gained~~ produced ~~a feed conversion value~~ similar FCR to ~~that of~~ the control feed. ~~The results of this study showed that males Alabio males are able to utilize the feed ingredients after formulated according to the needs of duck Alabio male grower phase.~~ This finding suggested~~s~~ that the formulated local diet containing leubiem fish waste is able to provide the level of palatability, quantity and balance of nutrients and it is~~so~~ effective in ~~spurring~~ promote growth of the ducks and improves~~ing~~ ~~the~~ feed to bodyweight conversion of the rations. The smaller the feed conversion rate, the more efficient the use of ration by livestock (Arifah *et al.* 2013). The value of feed conversion depends on the quality of feeds given to the animal. The higher the nutrient conceived the better the conversion of the resulting feed. This happens because with a good feed, the livestock consumed less feed ~~to produce the same bodyweight in compare to less good one. than the less good feed~~. ~~Good~~ High growth reflected~~s~~ the efficiency of ration consumption and it can be seen from decreasing ration conversion rate (Nurhayati *et al.* 2016).

Mortality

The results showed that the use of leubiem fish waste in feed formulation did not affect mortality of Alabio male duck grower phase. This suggests that the use of leubiem fish waste

may be one of the most reliable sources of feed ingredients as a protein source in Alabio duck ration formulation as well as good and regular maintenance management. Provision of ration

and regular water supply greatly affects the immune system of ducks. Cage hygiene also greatly affects the mortality of ducks, where dirty cages ~~are dirty and untreated will~~ easily le~~a~~d to ~~seed~~ disease infection that ~~can~~ caused death ~~in~~ of the ducks. Good maintenance management can control and prevent disease on ducks and ~~can~~ inhibit the occurrence of infection so ~~as to minimize~~ mortality rate in ducks were minimized (Shandu 2014).

Conclusions

It was concluded that the use of leubiem fish waste (skin flour 10%) ~~could~~ can serve as a source of protein in duck ration and able to increase body weight gain, and final body weight of male Alabio duck.

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