

SUMMARY

PENAMPILAN PRODUKSI DAN REPRODUKSI ITIK MOJOSARI SETELAH PEMBERIAN PAKAN YANG MENGANDUNG IKAN SAPU-SAPU (*Hypostomus plecostomus*)

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Asnawi. Postgraduate Program, Faculty of Animal Husbandry, Brawijaya University Malang. Production and reproduction performance of Mojosari laying ducks after giving feed containing sapu-sapu fish (*Hypostomus plecostomus*). Promotor : Prof. Dr. Sc. Agr. Ir. Suyadi, MS. Co-promotor : Dr. Ir. Edhy Sudjarwo, MS. And Dr. Ir. Osfar Sjofjan, M.Sc.

Sapu-sapu fish is a species of freshwater fish which is able to live in polluted waters, can live in the ground of rivers, it has a body covered with hard scales except on the stomach. This is one reason why it is not consumed by humans. The populations of sapu-sapu fish is quite high in the downstream area of the watershed. It is the reason to alternate as substitution of commercial feed. The use of sapu-sapu fish as mix feeding of local ducks by the farmer in Mataram city has been initiated long times ago and it was used until now. Asnawi *et al* (2010) predicted that potential amount of sapu-sapu fish which can be used by 272 kg/day or equivalent to 99.28 tons/year.

The aim of study was to explore the nutrient value, albumin, metabolizable energy (AME) and digestible protein of sapu-sapu fish as feed supplement sources for Mojosari laying ducks. Evaluation level of sapu-sapu fish on production and reproduction performances of Mojosari laying ducks. The purpose of the study as scientific information and as a basis for formulating duck feed in particular for Mojosari laying ducks.

This study was divided into two stages, i.e. the first stage of the study aimed to evaluate the nutritional value, metabolizable energy and protein digestibility. The second stage was aimed to application on sapu-sapu fish to Mojosari laying ducks. The first stage of study was exploration of sapu-sapu fish chemical content by proximate analysis (crude protein, crude fat, crude fiber, ash and gross energy), essential and non-essential amino acid, mineral and albumin. The second of the study to do application of sapu-sapu fish on Mojosari laying ducks.

The first of study was conducted by explorative method, i.e. fresh sapu-sapu fish directly obtained from river and then analyzed in laboratory. Proximate analysis and gross energy was carried out at the laboratory of nutrition and feed, Faculty of Animal Husbandry, Mataram University. Mineral and albumin analysis was carried out at laboratory of chemical, Brawijaya University. Amino acid analysis at Laboratory of Biological Central, Brawijaya University, Malang.

The second of the study was determined by experiment method with four treatment is P0 (80% rice bran: 20% commercial feed), P1 (90% rice bran: 10% sapu-sapu fish), P2 (80% rice bran: 20% sapu-sapu fish) and P3 (70% rice bran: 30% sapu-sapu fish). Each of treatment divided in to five replications and each replication consisted five ducks. Design of experiment used Completely Randomized Design (CRD). Analysis of variance was used to analyze the

effect of treatment, while the differences between treatments were tested using Duncan's multiply range test.

The first stage of study result, showed that sapu-sapu fish contained crude protein $37,07 \pm 3,50$ %, fat $16,85 \pm 4,35$ %, crude fibers $1,92 \pm 1,09$ %, ash $33,25 \pm 3,99$ % and gross energy $4559 \pm 1244,37$ kkal/kg. sapu-sapu fish contained total amino acid was $24.027 \pm 1,796$ %. mineral Ca and P contained : $0,4984 \pm 0,0001$ %, and $0,1762 \pm 0,004$ %, Na : $1,53 \pm 0,01$ %, Mg : $0,2201 \pm 0,000$ %, K : $0,13 \pm 0,000$ %, S : $275,672 \pm 0,5711$ ppm, Fe : $100,131 \pm 0,0251$ ppm, Zn : $304,633 \pm 0,0161$ ppm dan Cu : $189,314 \pm 0,0238$ ppm. Sapu-sapu fish contained heavy metal Pb : $4,25 \pm 0,18$ ppm, Cr : $0,28 \pm 0,000$ ppm dan Cd : $0,87 \pm 0,03$, but Hg was not detected. Sapu-sapu fish content albumin were $4,29 \pm 0,02$ %. Metabolizable energy and protein digestibility were $2890.52 \pm 33,59$ kkal/g, and $64.80 \pm 15,71$ % respectively.

The second stage of study result, showed that average daily gain of Mojosari laying ducks given sapu-sapu fish 20 % (P2) and 30 % (P3) were affected highly significant different ($p < 0,05$) vs. treatment concentrate (P0) and treatment sapu-sapu fish 10 % (P1). Egg production of Mojosari laying ducks with supplementation of 20 % and 30 % sapu-sapu fish were not affected significantly ($p > 0,05$) vs. commercial feed, while treatment P1 lower than the other treatment. Feed consumption of laying ducks with 20 % commercial feed (P0), supplementation 10 %, 20 % and 30 % sapu-sapu fish were 171 ± 7.26 g/ekor/hari; $163 \pm 10,64$ g/ekor/hari; 171 ± 10.3 dan $163 \pm 16,0$ g/ekor/hari respectively ($P > 0,05$). Feed conversion of laying ducks with 20 % commercial feed (P0), supplementation 10 %, 20 % and 30 % sapu-sapu fish were ; 6.768 ± 0.94 , 7.985 ± 1.94 ; 6.760 ± 0.87 and 6.727 ± 2.08 respectively ($P > 0,05$).

Egg weigh of ducks with supplementation sapu-sapu fish 30 % (70.8 ± 6.98 g) were affected not significantly ($P < 0,05$) were affected highly significant different ($p < 0,05$) vs. supplementation commercial feed 20 % (65.6 ± 3.647 g). Supplementation sapu-sapu fish 10 % (64.2 ± 5.069 g), and 20 % (65.6 ± 3.647 g). shape index of treatment P0, P1, P2 and P3 were 80.15 ± 0.731 g, 77.45 ± 3.013 g, 76.32 ± 8.99 g, and 80.66 ± 3.55 g respectively were not affected significant ($P > 0,05$). Shell weight of P0, P1, P2 and P3 were 13.36 ± 1.417 13.36 ± 1.417 g, 11.4 ± 2.073 g, 9.6 ± 7.701 g and 14.2 ± 1.48 g respectively, statistical analysis were not significant ($P > 0,05$). Shell thickness of treatment P0, P1, P2 and P3 were 0.48 ± 0.019 mm, 0.47 ± 0.044 mm, 0.46 ± 0.022 mm, and 0.49 ± 0.02 mm respectively, statistical analysis were not significant ($P > 0,05$).

The result of the yolk weight of Mojosari laying ducks with supplementation commercial feed 20%, sapu-sapu fish 10%, 20% and 30% were 21.32 ± 1.101 , 22 ± 20 , 23.2 ± 2.168 and 25 ± 4.85 g respectively, statistical analysis were not significant ($P > 0,05$). Albumin weight of treatment P0, P1, P2, and P3 were 26.96 ± 1.24 g, 30.8 ± 2.28 g, 32.8 ± 3.033 g, and 31.6 ± 2.88 g respectively, statistical analysis were not significant ($P > 0,05$). Haugh Unit of treatment P0, P1, P2, and P3 were $97,17 \pm 0,61$, $96,85 \pm 0,66$, $96,03 \pm 0,66$ and $98,10 \pm 0,48$ respectively, statistical analysis were not significant ($P > 0,05$). Average yolk color score of treatment supplementation commercial feed (P0) were 10.56 ± 0.932 were affected highly significant ($p < 0,05$) vs. treatment sapu-sapu fish 10 % (3.4 ± 1.140), 20 % (5.8 ± 0.447) and 30 % (6.8 ± 0.45).

The result of the cholesterol at yolk of Mojosari laying ducks with supplementation commercial feed 20 % (P0) were $23,6 \pm 2.275$ mg/100 ml, highly significant affected ($P < 0,05$) compare with supplementation of sapu-sapu fish 10% (P1), 20% (P2) and 30% (P3) were $12,6 \pm 1.140$ mg/100 ml, 13 ± 3.082 mg/100 ml, and $15,20 \pm 4.15$ mg/100 ml respectively. Farther more of meat cholesterol the result of meat cholesterol of Mojosari laying ducks with supplementation commercial feed 20 % (P0) were $3,225 \pm 1.554$ mg/100 ml, highly significant affected ($P < 0,05$) compare with supplementation of sapu-sapu fish 10% (P1), 20% (P2) and 30% (P3) were $1,55 \pm 1.173$ mg/100 ml, $3,43 \pm 2.142$ mg/100 ml, and $1,525 \pm 1.21$ mg/100 ml respectively.

The result of the gastrointestinal tract weight of Mojosari laying ducks with supplementation sapu-sapu fish 20% (P0) were 133.56 ± 22.97 g, was affected highly significant ($P < 0,05$) compared with treatment P0 : 115.00 ± 28.18 g, P1 : 115.00 ± 28.18 g, P1 : 128.33 ± 23.62 g, and P2 : 127.44 ± 18.17 g respectively. The length of gastrointestinal tract of Mojosari laying ducks with supplementation sapu-sapu fish 30 % (P3) were $201.22 \pm .63$ g, was highly significant ($P < 0,05$) compared with treatment P0 were 196.22 ± 24.75 g, P1 : 203.22 ± 10.06 g, P2 : 199.11 ± 11.49 g, and P3 : 201.22 ± 7.63 g respectively.

The result of the performances of reproductive organ of Mojosari laying ducks i.e. ovarium weight of treatment P0, P1, P2, and P3 were 15.00 ± 20.83 , 13.25 ± 17.19 g, 25.00 ± 28.59 g and 13.89 ± 20.56 g respectively. Oviduct weight were 19.56 ± 16.70 g, 16.11 ± 14.52 g, 23.50 ± 18.94 g, 18.22 ± 17.46 g respectively. Oviduct length was 37.44 ± 18.62 , 28.89 ± 17.55 g, 43.38 ± 29.95 g, and 32.89 ± 17.81 g respectively.

The amount of large yolk follicle (LYF) were affected not significant ($P > 0,05$) between each treatment. The amount of the small yolk follicle (SYF) of ducks with supplementation of sapu-sapu fish 20% and 30% were highly significant ($P < 0,05$) vs. supplementation commercial fed 20% and sapu-sapu is 10%. The amount of large egg white follicle were affected not significant ($P > 0,05$) for all treatment.

The conclusion of study is: 1) sapu-sapu fish can be used as feed supplement for increased performance production because it has protein, high metabolizable energy (AME), high digestible protein. 2) The egg production of Mojosari laying ducks with supplementation 20 % sapu-sapu fish was not significantly different with supplementation 20% sapu-sapu fish, 3) The internal egg quality of Mojosari laying ducks with supplementation sapu-sapu fish more than supplementation commercial fed, while the yolk color of supplementation sapu-sapu fish less than supplementation commercial fed.

It was suggested sapu-sapu fish can be used properly as mash form and followed increment *Histidin* dan *Cystine* amino acid, and heavy metal drop down. Albumin content of sapu-sapu fish important to isolation for human's health.

Key words : Ducks, Performance, Sapu-sapu fish,