The utilization of endopower β in commercial feed which contains palm kernel cake on performance of broiler chicken

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Abstract. Palm kernel cake is an agricultural waste that can be used as raw material in the preparation of poultry rations. The design used was Completely Randomized Design (CRD) with 5 treatments and 4 replications. Level endopower β used 0 % (R0), 0.02% (R1), 0.04% (R2) and 0.06% (R3). The results showed that R0 a and R0b were significantly different from R3 in terms of diet consumption, body weight gain and the conversion ratio. The utilization of endopower β in commercial diets containing palm kernel cake in broilers can increase body weight gain, feed consumption, improve feed use efficiency and energy. It is concluded that utilization endpower β improve performances of broiler chicken fed by diet containing palm kernel cake.

1. Introduction
In the poultry industry, the ration cost component is the largest production cost component that can reach 70%. Therefore, many efforts are made to reduce the cost of ration so that the industry is more efficient and profitable for business. The high price of rations in the livestock business, then we need to find an alternative that can suppress and reduce the cost of a high ration. In this case with the utilization of Palm kernel cake with a high level or reach 20% of the total ration can reduce the price of the ration. According [1], utilization of palm kernel cake (PKC) can be given up to 25%-30%.

Feed broiler chicken containing corn up to 40% this often causes expensive feed prices and compete with humans. To reach corn content of about 40% in feed, maize is often imported from other countries like from India this causes high feed prices. Along with the high price of feed more and more solutions are in can to reduce feed prices such as Palm kernel cake mixed to feed. The high nutrient content of Palm kernel cake also a factor used as an alternative to feed mixture of broiler where palm kernel cake contains metabolism energy 2.810 kcal / kg, crude protein 15.40% crude fat 6.49% crude fiber 15% this causes palm kernel cake Ogled as alternative feed to reduce high feed costs.

Feed industry still rarely uses palm kernel cake as in the ration mixture this is due to high coarse fiber, in dingding cell also contains mannos of 56.4% [2], causing palm kernel cake is difficult to be broken and in Digested by broiler chickens, especially mannan found in gymnospermae. The purpose of this research is to know the influence of endopower β supplementation in feed containing palm kernel cake as much as 20% to consumption, body weight gain, feed conversion, income feed cost (IOFC) broiler.
2. Materials and methods
The research has been conducted in Animal Husbandry Laboratory of Animal Husbandry Study Program Faculty of Agriculture University of Sumatera Utara Medan. This study lasted for 35 days starting from November to December 2013. Materials used in the study is a day old chick (DOC) broiler as much as 160 heads. The diet material consists of commercial rations PT. Sabas Indonesia Feed Mill, palm kernel cake, fish meal and Endopower β. The tool used is a battery cage measuring 100cm x 100cm x 50cm, the number of cages as many as 20 units and each unit in the contents of 8 chicks aged one day and each unit is equipped with feed and drinking place. The research design used was a complete randomized design (CRD) consisting of 5 treatments and 4 replications and each replication consisted of 8 broiler. The treatments studied were:

- **R0a** = Commercial diet (100%)
- **R0b** = Commercial diet + 20% Palm kernel cake
- **R1** = Commercial diet + 20% Palm kernel cake + 0.02% Endopower β
- **R2** = Commercial diet + 20% Palm kernel cake + 0.04% Endopower β
- **R3** = Commercial diet + 20% Palm kernel cake + 0.06% Endopower β

Parameters measured in the study are ration Consumption (g / head / week), the consumption of the ration is calculated on a weekly basis based on the difference between the amount of diet given and the amount of residual diets; Increase of Body Weight (g / head / week), measured by weighing the body every week minus the weight of the previous week; ration Conversion, ration conversion is calculated by comparing the amount of ration consumed by the weight gain achieved per week; Income Over Feed Cost (IOFC), obtained by calculating the difference in the income of farm business less the cost of ration. Revenue is the multiplication of weight gain due to the treatment (in Kg weight of life) to the selling price, while the ration cost is the cost incurred to produce the growth of the livestock body weight [3].

Research phase: performance observation
The cage used is a stage system, consisting of 27 units, each unit has 8 chicks (DOC). Before chicks are inserted, the cage is cleaned and disinfected with Rodalon and fumigation using 40% formalin and KMnO4. Before the chick is inserted into the cage, weighing first to determine the range of initial body weight to be used, then placed in the experimental unit. The rationing material used consisted of commercial rations, palm kernel cake, fish meal and endopower β. The rationing material used was weighed first according to the composition of the ration structure specified in the formulation of each treatment. Chickens are kept in a heated and lighting treatment enclosure (incandescent 40 watt lamp). Rations and drinking water are administered in ad libitum. The data were collected every week during the study (7 weeks).

3. Results and discussion
3.1. Consumption of Rations
The result of the study of endopower β in commercial ration containing palm kernel cake in broiler chicken to consumption can be seen in Figure 3.

![Figure 1. Average consumption of unit](image-url)
The quality of ration in treatment of R0a was significantly higher than the treatment of R0b, R1, R2, R3 because the treatment of R0a was commercial feed having a standard whereas in the feed treatment R0b, R1, R2, R3 was a commercial feed mixture added by bus of 20%. This affects the level of livestock consumption in this ration in accordance with the statement [4], which states that in consuming livestock ration is influenced by various factors, among others: age, palatability of ration, livestock activity, ration energy and protein level. Also determined by the quality and quantity of the given ration and its classification.

Feed consumption containing Palm kernel cake is lower than commercial feed in the study [5], which uses 20% of palm kernel cake in basal feed produces lower consumption than commercial feed. The amount of difference in consumption of broiler chicken fed with a meal containing Palm kernel cake is 32.61%. This is due to the high content of feed fiber in feed containing Palm kernel cake may be the cause of low feed intake. According [6], the use of fiber needs to be limited, between 3% - 5%, because improper use can reduce the efficiency of feed.

3.2. Body weight gain

The addition of body weight can be calculated by weighing the body weight every week and reduced by the weight of the previous body.

![Graph showing body weight gain](image)

Figure 2. Average weight gain.

The addition of endopower β on treatment of R1, R2, R3 showed significant effect on weight gain. This suggests that the endopower β is also a kind of enzyme that contributes to the increase of feed digestion, so that the feed given endopower β can increase the weight of the broiler body according to the statement [7], Endopower β makes the productivity higher and more profitable. With Endo power β the digestibility of feed ingredients will increase. These results markedly lower feed costs, improving the appearance of livestock. The α-galactosidase enzyme contained in the endopower β will hydrolyze the complex sugars that can not be digested by the digestive system because broiler chickens can not produce α-galactosidase enzymes. The xylanase enzyme in the endopower β® will degenerate the polysaccharides, break down the cellulose and increase the nutrient content of the palm kernel meal contained in the feed. The xylanase enzyme breaks down the non-soluble nonpartic polysaccharides [8].
3.3. Feed conversion ratio

![Conversion Ratios](image)

**Figure 3.** Conversion of age ration 0-35 days

The lowest feed conversion is in the treatment of R0a by using commercial feed because of the difference in feed texture where in the treatment of R0b, R1, R2, R3 feed containing BIS where BIS contains high coarse fiber so that broiler cannot efficiently absorb the nutrients contained in the feed. And shells contained in the BIS mixture can damage the digestive system of the broiler. This is in accordance with the statement [9], which states a high crude fiber content (15%). Citrus cake meal is usually contaminated with shell pieces of palm with an amount of about 15-17%. This shell fragment has a very hard and sharp texture. This causes the substance to be less favorable to livestock and it is feared to damage the gastrointestinal wall in young cattle.

3.4. Income Over Feed Cost (IOFC)

![Income over feed cost](image)

**Figure 4.** Average income feed cost (IOFC)

The results showed that increased doses of endopower β can increase the average income feed cost (IOFC) of broiler chicken ration. The average income feed cost (IOFC) in R1, R2 and R3 was higher than that of R0b without the addition of β endopower. The value of metabolism energy of R3 ration with dose of 0.06% endopower β higher than with R1 and R2 that is equal to Rp.12,583.
4. Conclusions
The use of endopower β in commercial rations containing palm kernel cake in broiler age 0-35 days can increase body weight gain, feed consumption and improve efficiency of use at level 0.06% endopower.

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