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THE USE OF CANDIDA UTILIS IN FERMENTATION DRY POULTRY WASTE AND BY PRODUCT OF TAPIOCA AS A FEED ADDITIVE ON THE EGG QUAIL PRODUCTION

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ABSTRACT

Candida utilis has a good prospect as a source of protein in feed due to the producing many different enzyme to increase the digestion process and production of egg quail. The aim of this research was to study the effect of *Candida utilis* in fermentation dry poultry waste (DPW) and by product of tapioca flour (Gamblong = G) as a feed additive on the egg quail production the result of the research can be used as information for economic value for quail feeding with better quality and quantity egg quail production. This research used Fully Randomized Design with 13 treatments and 3 replication. The feed consisted of 80% of DPW and 20% G. The feed was fermented by *Candida utilis* using of 0.1% (DPWG I), 0.2% (DPWG II) and 0.3% (DPWG III). The ration given were then substituted DPWG: P0 (100% of feed commercial), P1 (95% of feed commercial +5%DPWG I), P2 (95% of feed commercial + 5% DPWG II), P3 (95% of feed commercial + 5% DPWG III), P4 (90% of feed commercial + 10% DPWG I), P5 (90% of feed commercial +10%DPWG II), P6 (90% of feed commercial + 10% DPWG III), P7 (85% of feed commercial + 15% DPWG I), P8 (85% of feed commercial + 15% DPWG II), P9 (85% of feed commercial + 15% DPWG III, P10 (80% of feed commercial + 20% DPWG I), P11 (80% of feed commercial + 20% DPWG II), P12 (80% of feed commercial + 20%DPWG III). Parameter observed were the hen day productio, protein function efficiency in egg, egg weight and feed conversions. Analysis data used analysis of variance and followed by Duncan test. The result of these research showed that the treatments gave significant by (9<0,1) hen day production, protein fuction efficiency and feed conversion, but not on the egg weight. Optimum value of this result was at P12 treatment (80% of feed commercial + 20% of DPWG III) with hen day production in egg of 83.30%, protein fuction efficiency in egg (23.7%, egg wight of 10.54 g/quail and feed conversion in egg of 2.00.

INTRODUCTION

A major of enzyme in recent technology have been produced and directly applied as feedstuff. Yet, because of the high price, some new alternatives emerge by applying microorganism producing enzyme.

Candida utilis that exists in khamir culture as feed additive can be.used, due to has natural attractive flavor, assisting digestion capacity parallel with being produced organic acid (acidity of digestive tract), producing high protein and Vitamin B complex and yielding fine enzyme metabolic (protease, amilase, sellulose and lipase) as well as has capability for enhancing immune for fighting pathogenic bacteria. This happens

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brought about the culture khamir will be back more active as getting digestive tract convenient to its active condition.

Dry Poultry waste (DPW) was the waste of poultry breeding , that stilll contained high nutrition value. Dry poultry waste (DPW) could be applied as protein resources in feedstuff. By product of tapioca flour has contened to high carbohydrates as energy resource in feedstuff. Based on the information above it is nessary to conduct and study the use of C*andida Utilis* in dry poultry waste and by product of tapioca flour as feed additive for quail production.

MATERIALS AND METHODS

Materials used in the experiment were dry poultry waste (DPW), by product of tapioca flour factory (Gamblong = G), yeast culture of *Candida utilis*, commercial feed and 390 quails *(Coturnix coturnix japonica)*, as well as 39 square pens (each square contained 10 quails).

The feed consisted of dry poultry waste mixture and by product of tapioca flour (Gamblong = G) with ratio 80% and 20%. The mixture was fermented with *Candida utilis* at the level of 0.1 (DPWG I), 0.2 (DPWG II) and 0.3 (DPWG III). Each fermented DPWG mixture was given by way of reducing proportionally the use of commercial feed, thus it could be obtained feed treatments respectively as follows:

P0 = 100 % basal feed
P1 = 95% basal feed + 5% DPWG I
P2 = 95% basal feed + 5% DPWG II
P3 = 95% basal feed + 5% DPWG IIII
P4 = 90% basal feed + 10% DPWG I
P5 = 90% basal feed + 10% DPWG II
P6 = 90% basal feed + 10% DPWG III
P7 = 85% basal feed + 15% DPWG I
P8 = 85% basal feed + 15% DPWG II
P9 = 85% basal feed + 15% DPWG III
P10 = 80% basal feed + 20% DPWG I
P11 = 80% basal feed + 20% DPWG II
P12 = 80% basal feed + 20% DPWG III

The study constitutes experimental study by using Completely Randomized Design. Analysis applied in the study was variance analysis and when there would be differences continued by using Duncan Multiple distance (Stell and Torrie, 1991). The observed parameter were performance of quail egg production covered: hen day egg production (percentage), efficiency of egg protein use (percentage), egg weight (gram/individual), feed conversion .

RESULT AND DISCUSSION

Egg Production

The hen day egg production ranged from 51,51 to 70,53 %. Variance analysis showed that treatment was significantly improved to percentage of hen day egg production ($P<0.01$). These described that commercial feed substituted with mixture of dry poultry waste with tapioca by product fermented by mold *Candida utilis*, it was predicted that mold *Candida utilis* in digestive tract would be back active, and further

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process would produce enzymes of amilase, selulose, protease and lipase. By producing those enzyme there will be increase of digestible nutrient and can be absorbed by body and furthermore influence egg production.

Duncan multiple distance test was undertaken, showed that hen day egg production was absolutely fine from 74,37 to 83,30%, these respectively happened to treatment of P0, P1, P2, P3, P6, P8, P9 and P12. These showed that treatment of P12 namely 0,3% mold *Candida utilis* still can be applied for fermentation to 80 % commercial feed plus 20% DPWG III. Hen day egg production was relatively similar to commercial feed given control treatment, so when observing on feed price that treatment of P12 was more economical.

The efficiency of egg protein use

The efficiency of egg protein use were ranged from 23,10 to 30,20%. Result of variance analysis indicated that treatment were significantly influenced to efficiency of egg protein use ($P<0.01$). The fine efficiency rate of egg protein use described by its low rate. By undertaking Duncan multiple distance test, it displayed that fine efficiency of egg protein use respectively took place at treatments of P0, P1, P3, P6, P9 and P12, namely on feed conversion ranged from 23,10% to 24,40.

Egg Weight

During egg weight investigation every single treatment was ranged from 9,30 to 10,60 gram. Result of variance analysis performed that the treatment was not significantly affect egg weight. These could be mentioned that each treatment feed satisfied or unsatisfied nutrient relatively would not affected to weight egg. This was parallel to Lee et al opinion (1977), of quails given feed at content of 16, 18, 20, 22, 24, and 26% produced relatively similar egg weight, namely ranged from 10,3 to 10,9 gram.

Feed Conversion

Feed conversion ratio was number of consumed feed divided by egg weight that produced during investigation. During experiment feed conversion ranged from 1.98 to 2.89.

Result of variance analysis showed that the treatment has significant effect on the feed conversion ($P<0.01$). The fine feed conversion have to be in low rate. Good feed conversion respectively took place on treatment of P0, P1, P3, P6, P9, P12 with conversion range of 1,98 to 2,33.

CONCLUSION

Candida utilis fermentation could enhance content of low quality feed nutrient to the fine one. The economical optimum treatment was P12 (80 % basal feed + 20% DPWG III), with hen day production of 83,30%, efficiency of egg protein use of 23,7, egg weight of 10,54 gram and feed conversion of 2.

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