CASSAPRO IN BROILER RATION: EFFECT OF HALQUINOL SUPPLEMENTATION

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ABSTRAK

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Satu percobaan dilakukan untuk menentukan pengaruh berbagai tingkat cassapro (singkong yang difermentasikan) dan suplementasi halquinol terhadap kinerja ayam pedaging. Ransum percobaan disusun dengan kandungan protein dan energi yang sama dengan berbagai tingkatan cassapro (0, 10, 20, dan 30%). Ransum dengan 20 dan 30% cassapro disiapkan tanpa dan dengan suplementasi halquinol (60 ppm). Setiap ransum diberikan pada 40 ekor ayam pedaging umur tiga hari, dibagi dalam 4 sangkar (5 jantan dan 5 betina per sangkar) selama 4 minggu. Hasil penelitian menunjukkan bahwa semakin meningkat kandungan cassapro dalam ransum, semakin rendah pertambahan bobot badan ($P < 0,005$), konversi ransum (FCR) semakin buruk ($P < 0,005$), meskipun tidak mempunyai pengaruh yang nyata terhadap konsumsi pakan. Suplementasi halquinol tidak mempunyai pengaruh terhadap konsumsi pakan, namun secara nyata memperbaiki pertambahan bobot badan ($P < 0,05$) maupun FCR ($P < 0,01$). Dari percobaan ini disimpulkan bahwa kinerja ayam akan menurun dengan kandungan cassapro yang tinggi dalam ransum, dan hal ini sebagian dapat diatasi dengan suplementasi halquinol.

Kata kunci: Ayam pedaging, cassapro, halquinol

ABSTRACT

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A trial was conducted to determine the effect of various level of cassapro (fermented cassava) and halquinol supplementation on the performance of broiler chickens. Experimental rations were formulated isoprotein and isoenergy with graded level of cassapro (0, 10, 20 and 30%). The 20 and 30% cassapro ration were prepared without and with halquinol supplementation (60 ppm). Each ration was fed to 40 of three day old broilers, divided into 4 cages (5 males and 5 females per cage) for 4 weeks. Increasing the level of cassapro significantly reduced body weight gain ($P < 0.005$), increased feed conversion ratio (FCR) ($P < 0.0005$) with no effect on feed intake ($P < 0.10$). Halquinol supplementation has no effect on feed intake, but significantly increased body weight gain ($P < 0.05$) and improved the FCR ($P < 0.01$). It is concluded that high level of cassapro in the ration will cause poorer performance of the birds, however it can be alleviated by halquinol supplementation.

Keywords: Broiler, cassapro, halquinol

INTRODUCTION

Previous report indicated that cassapro, a protein enriched cassava, could improve the performance of broilers, however the effect was parabolic (KOMPIANG *et al.*, 1994). The performance of the bird receiving 5% cassapro (average body weight gain was 1195 grams, FCR was 1.81) was better than those receiving 10% cassapro (average body weight gain was 1185 grams, FCR was 1.88). Although both levels were better than the 0% cassapro inclusion (average body weight gain was 1171grams, FCR 1.90). It has been suggested that nucleic acid and cell wall content of cassapro could be responsible for that phenomena, since the major protein in cassapro is fungal or microbial protein. Similar observations have been reported by various workers working with single cell/microbial protein (DAGHIR and ABDULBAKI, 1977; HEWITT and HABIB, 1978; YOSHIDA, 1980; KOMPIANG, 1983). Nucleic acid and cell wall are poorly digested by poultry, and stimulate peristaltic movement, which in turn will cause wet dropping. Halquinol has been shown to be effective to prevent wet dropping from the bird fed high level of single cell protein such as *C. utilis*, and it also improved the bird performance (KOMPIANG, 1983).

In an attempt to improve the performance of birds fed with high level of cassapro, the effect of halquinol suplementation, an anti peristaltic feed additive, on the performance of the birds fed high level cassapro was tested.

MATERIALS AND METHODS

Cassapro was prepared by fermenting peeled-cassava tuber with *Aspergillus niger* described by KOMPIANG *et al.* (1994).

Six experimental rations were formulated to be isoprotein (21% protein with calculated lysine and

methionine content meet the requirements of broilers) and isoenergy (2900 kcal/kg, calculated) with graded levels (0, 10, 20 and 30%) of cassapro. The 20 and 30% cassapro ration were prepared without and with 60 ppm halquinol (Quixalud-CIBA) supplementation (Table 1). Each ration was fed to 40 of three day old broilers, allocated into 4 cages (5 males and 5 females per pen) for 4 weeks. Feed and water were given *ad libitum* during the trial. Body weight and feed consumption were measured bi-weekly, for body weight gain and FCR determination. The data were subjected to analysis of variance (CAMPBELL, 1967).

The birds were vaccinated against ND and Gumboro and anti CRD for diseases prevention. During the first three days, all birds were given commercial feed.

Table 1. Composition of experimental rations

Ingredients	Experimental ration number					
	1	2	3	4	5	6
Cassapro(%)	0.0	10.0	20.0	30.0	20.0	30.0
Halquinol (ppm)	0.0	0.0	0.0	0.0	60.0	60.0
Fish meal (%)	8.0	8.0	8.0	8.0	8.0	8.0
Corn (%)	71.3	66.6	61.9	60.0	61.9	60.0
Soy bean meal (%)	18.9	13.6	8.3	0.0	8.3	0.0
$CaCO_3$ (%)	0.8	0.8	0.8	1.0	0.8	1.0
NaCl (%)	0.5	0.5	0.5	0.5	0.5	0.5
Vit. Premix (%)	0.5	0.5	0.5	0.5	0.5	0.5

RESULTS AND DISCUSSION

Performances of the birds fed graded level of cassapro is summarized in Table 2. Body weight gain, FCR and feed intake of the birds fed 10% cassapro were similar to the control diet or 0% cassapro as reported previously (KOMPIANG *et al.*, 1994). Body weight gain of the bird fed 20% cassapro (743 ± 33 gram) was significantly ($P < 0.0005$) lower than the control or the 10% cassapro. This was not due to lower feed intake, since the feed intake (1503 ± 135 gram) was similar to the control or 10% cassapro fed birds. This indicating that the feed was used less efficiently, and indeed the FCR (2.02 ± 0.11) was significantly ($P < 0.005$) poorer than the FCR of control (1.79 ± 0.03) or 10% cassapro (1.77 ± 0.03).

Further increased of cassapro level up to 30%, impaired the average body weight gain, down to 507 ± 25 gram, which was significantly ($P < 0.0005$) lower than the other treatments. This was partly due to reduction of feed intake (1271 ± 138 gram), but again mostly due to less efficient of feed utilization. The FCR was 2.50 ± 0.15 which was significantly ($P < 0.0005$) poorer than the other treatment. The poorer FCR could be partly due to faster movement of the feed in the gut which was probably due to the high level of cell wall and nucleic acid in the ration with high level of cassapro. A similar observations have been reported by various workers working with single cell/microbial protein (DAGHIR and ABDULBAKI, 1977; HEWITT and HABIB, 1978; YOSIDA, 1980; KOMPIANG, 1983).

Table 2. Performance of the experimental birds fed different level of Cassapro

Cassapro level (%)	Average feed intake (g)	Average weight gain (g)	Average FCR
0	1480 ± 31	827 ± 24[a]	1.79 ± 0.03[a]
10	1498 ± 70	846 ± 29[a]	1.77 ± 0.03[a]
20	1503 ± 135	743 ± 33[b]	2.02 ± 0.11[b]
30	1271 ± 138	507 ± 25[c]	2.50 ± 0.15[c]
P values			
Treatments	< 0.100	< 0.0005	< 0.0005
30% vs 0+10+20%	< 0.010	< 0.0005	< 0.0005
20% VS 0 + 10%	> 0.250	< 0.0005	< 0.0050
10% VS 0%	> 0.250	> 0.2500	> 0.2500

Note: different superscript differ significantly

The effect of halquinol supplementation in the 20 and 30% cassapro rations on the performance of the chickens is shown in Table 3. The level of cassapro (20 and 30%) has a significant effect on feed intake ($P < 0.025$), weight gain ($P < 0.0005$) and FCR ($P < 0.0005$). The feed intake of the bird fed 30% cassapro ration (1280 gram) was lower than those of 20% cassapro (1471 gram). Supplementation with halquinol has no effect on feed intake. A similar observation was reported that halquinol has no effect on feed intake (KOMPIANG, 1983). The lower feed intake could be partly responsible for the lower body weight gain of the birds fed 30% cassapro ration (555 gram) as compared to those fed 20% cassapro (751 gram). Halquinol supplementation significantly ($P < 0.05$) improved body

Table 3. Effect of halquinol supplementation on performance of the broilers fed high level of cassapro

Cassapro level (%)	Halquinol (ppm)	Average feed intake (g)	Average weight gain (g)	Average FCR
20	0.0	1503 ± 135	743 ± 33a	2.02 ± 0.11[ab]
20	60.0	1450 ± 59	760 ± 35[a]	1.91 ± 0.07[a]
30	0.0	1271 ± 138	507 ± 25[c]	2.50 ± 0.15[c]
30	60.0	1289 ± 100	594 ± 56[b]	2.20 ± 0.1)[b]
P values				
Treatments		< 0.100	< 0.0010	< 0.0005
Cassapro (C)		< 0.025	< 0.0005	< 0.0005
HalquinoL (H)		>.0.250	< 0.0500	< 0.0100
C x H interaction		> 0.250	> 0.2500	> 0.2500

Note: different superscript differ significantly

weight gain from 625 gram to 677 gram. However, the difference was likely due to the different in its efficiencies on feed utilization. The FCR of the 30% cassapro ration was 2.35, while the 20% cassapro ration was 1.96. Halquinol supplementation significantly ($P < 0.01$) improve the FCR from 2.26 to 2.05. Although the interaction effect of halquinol and cassapro level was not significant, the Duncant test showed that the effect of halquinol only significant for the 30% cassapro ration not for the 20% cassapro ration. In other word, halquinol only effective at high level (30%) of cassapro. From this trial, it could be concluded that lower performance, body weight gain and FCR, of the bird fed high level of cassapro could be alleviated by halquinol supplementation.

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