EFFECT OF DIGESTARCOM, A HERBAL FEED ADDITIVE ON THE PERFORMANCE OF BROILER CHICKS FED DIFFERENT LEVELS OF RAPESEED CAKE

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ABSTRACT

The effect of Digestarcom, a herbal feed additive on the performance of broiler chicks fed different levels of rapeseed cake was investigated. Fourteen experimental rations containing 7 rapeseed (0, 2, 4, 6, 8, 10 and 12%) x 2 Digestarcom (0 and 150 g per tone feed) levels were formulated and fed to 14 treatment groups in three replications having 10 chick each. A higher weight gain per bird was observed for all the levels of rapeseed treated with Digestarcom as compared to non-supplemented control group. The maximum feed consumption was observed in group fed 10% rape seed cake treatment and maximum weight gain was observed in 6% level. More feed was consumed and more weight was gained by the broilers fed ration supplemented with digestarcom and exhibited better feed to gain ratio than non-supplemented control.

Keywords: Digestarcom, herbal feed additive, broiler chicks, rape seed cake

INTRODUCTION

Pakistan is one of the principal producers of rapeseed *(Brassica campestris),* being cultivated as edible oil crop (Rafique and Inayat, 1971). This by-product, at present, is inadequately used in poultry feed due to the presence of an anti-nutritional factor, glucosinolate which have goitrogenic activity causing reduced feed intake, poor growth and poor feed conversion ratio (FCR) (Javaid, 1996).

The use of herbal products as growth promoters and feed intake enhancers have been established with respect to weight gain, FCR and reduced mortality (Breminkmeryer, 1996).

Digestarcom is a commercial herbal product, imported from Germany, a blend of various herbal extracts and essential oils. It includes some natural flavoring substances which are claimed to increase feed intake and improve FCR in broilers. This paper describes the effect of Digestarcom supplemented ration using different levels of rapeseed cake on feed intake and FCR.

MATERIALS AND METHODS

A total of 420 day-old broiler chicks were randomly divided into 42 experimental units having 10 birds each. The experimental units were randomly assigned to 14 treatment groups comprising 7 (0, 2, 4, 6, 8, 10, 12 %) rapeseed x 2 Digestarcom levels (zero, 150g/ton feed) in factorial arrangement with three replications. The birds were maintained under uniform managemental conditions. Data for weekly body weight, weekly feed consumption per experimental unit were recorded for six weeks and then converted into per bird basis and weekly feed to gain ratio was also computed.

The data were analyzed using ANOVA technique Randomized Complete Block design (Steel & Torrie, 1980).

RESULTS AND DISCUSSION

Weight Gain

The differences in mean weight gain per chick upto four and six weeks in birds fed ration containing different levels of rapeseed cake as well as supplementation of Digestarcom was found significant. The interaction between these two treatments was also found significant (Table 1 & 2). Maximum (944.40 g) weight was gained by the birds fed rations containing 4% rapeseed cake in starter phase. While in finisher phase maximum (1571.61g) gain in weight was observed in birds fed ration containing 0% rape seed cake and minimum (1448.96g) in those of 12% rapeseed cake.

Higher (1018.50g) weight was gained by the birds offered ration supplemented with herbal product, (Digestarcom) than non-supplemented control (832.80g) (Table 1) in starter phase whereas in finisher phase, maximum (1609.10g) weight was gained by the birds offered ration supplemented with herbal product than without supplementation (1445.03g).

The interaction of these two treatments showed maximum (1043.00g) gain in weight in birds receiving 4% rapeseed cake with Digestarcom and minimum (816.20g) in birds served with feed containing 12% rapeseed cake without Digestarcom in starter phase. While in finisher phase maximum (1629.00g) gain in weight was recorded in birds receiving ration with 6% rapeseed cake with Digestarcom and minimum (1337.26g) in birds served with feed containing 12% rapeseed cake without addition of Digestarcom.

The results clearly indicated that as the level of rapeseed cake increased, the weight gain decreased in both groups, i.e., with and without Digestarcom. But weight gain in birds fed on Digestarcom supplemented ration was higher than that of control. Rapeseed oil had been reported to decrease body weight significantly especially at higher intakes (Kozlowksi *et al.*, 1993). The findings of the present study showed that weight gain increased at a higher rate in herbal supplemented group which might be attributed to natural herbal extract, essential oils and flavour that enhanced the growth of the birds (Kumaran *et al.*, 1992). Significant increase in body weight of Indian rock Chicken was observed, when fed on LIV-52 powder (Herbal product) at the rate of 0.1, 0.2, or 0.3% (Dakshinkar *et al.*, 1985). Higher weight gain was reported in 400 broilers of two strains on diets supplemented with 1% herbal mixture (Huang *et al.*, 1992). Probably herbal product stimulated the activity of liver which resulted in enhanced bile production. Thus bile production in turn helped in assimilation of fat and, therefore, increased the growth rate. Secondly this product acted as an appetizer and aided in the synthesis of B-complex vitamin (Kumaran *et al.*, 1992). Significant improvement in weight gain was noticed in broiler chicks fed with a herbal preparation Stress roak (Rajmane *et al.*, 1996).

Feed Consumption

The differences in mean feed consumed per chick upto four and six weeks in birds fed rations containing different levels of rapeseed cake as well as supplementation of Digestarcom in feed was found significant. Interaction was also observed between these two treatments at six weeks (Table 1 & 2).

Maximum (1709.58g) feed was consumed by the birds fed ration containing 10% rapeseed cake and minimum (1447.31g) by the birds containing 0% rapeseed cake during starter phase. Whereas during finisher phase, maximum (3641.28g) feed was consumed by the birds fed ration containing 10% rapeseed cake and minimum (3348.94g) in those of 0% rapeseed cake (Table 2). As regards supplementation of Digestarcom, more (1634.30g) feed was consumed by the birds offered rations supplemented with Digestarcom than those of non supplemented (1568.79g) during starter phase (Table 1). Whereas during finishing phase more (3609.60g) feed was consumed by the birds offered rations supplemented with Digestarcom than without supplementation (3424.08g) (Table 2). Interaction between these two treatments showed that maximum (3756.26g) feed was consumed by the birds receiving ration containing 10% rapeseed cake supplemented with Digestarcom.

The results of the present study showed that birds consumed more feed when supplemented with Digestarcom (Herbal product) as compared to control. This improvement in feed intake might be due to some natural flavoring substances which increased the consumption of feed in birds. Similar results were also observed in another report (Aravind and Devegowda, 1996) where significant improvement was observed in feed intake of broilers fed ration supplemented with Liv-52 (Herbal product) at the rate of 0.2%.

Present study indicated that feed consumption was significantly increased in treatment groups supplemented with Digestarcom, even at higher inclusion rate of rapeseed cake. This increase might be due to the presence of herbal extract or flavour which mask the effect of bitter taste and pungent smell of rapeseed cake at higher levels. Although the antinutrtional factor glucosinolate limited the amount of rapeseed in poultry ration (Marquard, 1982), yet Digestarcom was found beneficial to neutralize its adverse effects. 10 % rapeseed meal have been reported to be used without adverse effect on growth rate of chicks (Summers *et al.*, 1982). Beyond this limit, it needed consideration and scientific exploration. Therefore, proper treatment of rapeseed meal would be indispensable prior to its inclusion in the ration for poultry feeding. Supplementation of herbal feed additive with significant improvement in feed intake was observed as compared to control group (Aravind & Devegowda, 1996).

Feed Efficiency

The differences in mean feed consumed per kg weight gain during starter and finisher phase in birds fed rations containing different levels of rapeseed cake as well as supplementation of Digestarcom in feed was found significant. The interaction between these two treatment was also found significant (Table 1). The best (1.550) feed efficiency was observed in birds receiving 0% rapeseed cake in feed and the poorest (1.88g) in birds receiving 12% rapeseed cake during starter phase. During finisher phase, the best (2.130) feed efficiency was noticed in birds receiving 0% rapeseed cake and poorest (2.450) in birds receiving 12% rapeseed cake.

The Digestarcom, resulted in better (1.606) utilization of feed to convert into live body weight in birds offered ration mixed with Digestarcom than without (1.886) during starter phase. While during finisher phase, better utilization (2.240) of feed to convert into the body weight was observed in birds offered ration mixed with Digestarcom than without (2.370) its addition.

Regarding interaction between these two treatments, best (1.470) feed efficiency was observed in birds receiving ration containing 2% rapeseed cake with Digestarcom and poorest (2.050) in the birds receiving 10% rapeseed cake with out Digestarcom (Table 1) during starter phase. While during finisher phase, best (2.080) feed efficiency was observed in birds receiving ration containing 0% rapeseed cake with Digestarcom and poorest (2.560) in the group receiving 12% rapeseed cake without Digestarcom supplementation.

et al., 1992). Improved FCR had also been reported in Hubbard broiler chicks with supplementation of a herbal product Cocci-Nel Lomoion (El-gendi *et al.*, 1994).

The results showed that with the supplementation of Digestarcom, the feed was better utilized to convert into live body weight as compared to rations without Digestarcom.

Digestarcom being a herbal product may contain some microminerals and vitamin and unidentified growth factor which helps in the proper utilization of feed particularly rapeseed to convert into live body weight.

Conclusion

Digestarom, a herbal feed additive having natural oils and flavouring extract may be used to enhance the utilization of rapeseed cake, a cheaper source of vegetable protein to get better efficiency output in terms of weight gain in broiler chickens.

Table 1: Average weight gain, feed consumed and feed efficiency in broiler chicks at four weeks fed rations varying rapeseed levels with and without digestarcom.

Levels of rapeseed cake (%)	Weight gain (g)		Feed consumed (g)		Feed efficiency	
	Without Digestarcom	With Digestardom	Without Digestarcom	With Digestardom	Without Digestarcom	With Digestardom
0	848.20 f	1009.10 d	1374.13 f	1520.50	1.620 fg	1.500 I
2	845.50 f	1030.60 b	1434.53 e	1515.00 d	1.690 def	1.470 I
4	845.80 f	1043.00 a	1607.03 d	1606.13 d	1.900 c	1.540 hi
6	830.40 g	1031.30 b	1602.80 d	1639.76 c	1.930 bc	1.590 gh
8	824.40 gh	1017.60 c	1651.66 c	1685.96 bc	2.000 ab	1.650 efg
10	818.90 hi	1013.80 cd	1678.83 bc	1740.33 a	3.050 a	1.710 de
12	816.20 i	984.30 e	1632.56 c	1732.36 a	2.000 ab	1.760 d
Mean	832.80 b	1018.50 a	1568.79 b	1634.30 a	1.886 a	1.606 b

Similar alphabets do not differ significantly at $P < 0.05$.

Table 2: Average weight gain, feed consumed and feed efficiency in broiler chicks at six weeks fed rations varying rapeseed levels with and without digestarcom.

Levels of rapeseed cake (%)	Weight gain (g)		Feed consumed (g)		Feed efficiency	
	Without Digestarcom	With Digestardom	Without Digestarcom	With Digestardom	Without Digestarcom	With Digestardom
0	1519.10 d	1624.13 a	3305.43 f	3392.46 d	2.170 e	2.080 f
2	1502.33 d	1627.30 a	3384.90 ef	3524.66 c	2.250 d	2.160 e
4	1477.96 e	1614.00 ab	3369.80 ef	3512.10 cd	2.280 d	2.170 e
6	1462.30 e	1629.00 a	3446.63 cde	3691.50 ab	2.350 c	2.260 d
8	1432.30 f	1614.00 ab	3500.70 cd	3743.70 a	2.440 b	2.310 c
10	1383.96 g	1594.00 b	3526.30 c	3756.26 a	2.540 a	2.350 c
12	1337.26 h	1560.00 c	3434.80de	3626.56 b	2.560 a	2.330 c
Mean	1445.03 b	1609.10 a	3424.08 b	3609.60 a	2.370 a	2.240 b

Similar alphabets do not differ significantly at $P < 0.05$.

It was found that birds receiving ration supplemented with Digestarcom resulted in better feed efficiency as compared to those without Digestarcom. The better utilization of feed might be attributed to the effect of herbal extracts which increased the action of inner secretions of the digestive system and utilized the feed more efficiently than that of commercial feed (Kumaran

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