Original Research

Effect of Feeding Corn (*Zea mays*) Germ Meal in Rabbits

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Abstract

A feeding trial was conducted with an objective to assess the effect of feeding corn germ meal (CGM) in broiler rabbits. Twenty-four weaned rabbits (6-8 week old) were randomly allotted to three groups, comprising of eight animals in each treatment group based on body weight. The group-I (T1) rabbits were fed with composite diet containing wheat bran as one of the major ingredient, while the groups II (T2) and group III (T3) received composite diets comprising of CGM which substitutes 50 and 100 % (w/w) of wheat bran respectively. The experimental period lasted for twelve weeks. The DM intake (g/h/d) T1 (92.51±0.31), T2 (88.40±0.29) and T3 (92.80±0.30) did not differ significantly among rabbits fed with different dietary regimen. The average daily gain (ADG) was significantly (P≤0.05) higher for T2 group (15.26 g/h/d) as compared to the rabbits of T1 group (11.13 g/h/d) and T3 group (11.22 g/h/d). However, the difference in ADG between T1 and T3 was not significant. The efficiency of feed utilization for weight gain (g DM intake / g gain) was significantly (P≤0.05) higher in T1 (8.52) and T3 (8.54) compared to T2 (5.92) group of rabbits. No significant difference was observed for digestibility of OM, however T2 was having significantly (P≤ 0.05) higher DM and CP digestibility than T1 and T3. Similarly, digestibility coefficient of CF for different treatments were found to be statistically similar, there was a significant difference (P≤ 0.05) observed in NDF digestibility among T1, T2 and T3 groups. ADF digestibility was found to be significantly higher (P≤ 0.05) in T2 than T1 and T3. There was significantly (P≤ 0.05) lower hemicelluloses digestibility for T1 when compared to T2 and T3 groups and significantly (P≤ 0.05) lower cellulose digestibility for T3 when compared to T1 and T2 groups. Thus CGM was found to be satisfactory substitute for wheat bran for economical rabbit production.

Key words: Body Weight Gain, Corn Germ Meal, Digestibility Wheat Bran, Rabbit

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Introduction

There is a deficit of about 50 per cent dry matter and 80 per cent of concentrate feedstuffs (Little *et al.*, 1963). This shortage of feeds and fodders for livestock in developing countries has drawn the attention of animal nutritionists for the research of newer and unconventional feed sources. The possibilities of feeding

agro-industrial byproducts in livestock rations have been explored extensively during the last two decades. Maize is used as animal feed and also serves as a basic raw material for the production of starch, oil, protein, alcoholic beverages, food sweeteners, corn germ meal (CGM), corn gluten meal (CGLM), gluten feed, distillers dried grains with soluble (DDGS) and fuel. Among various by-products from corn milling industry corn germ meal is one with medium protein and medium energy content, obtained after extraction of oil from the whole germ. The per cent DM, CP, EE, CF, TA, and TDN contents of CGM are 90, 20.5, 1.0, 12, 3.8, and 67, respectively and (Ca=0.01% P=0.43%, S=0.28%) (Lesson and Summers, 2005). Present study was carried out with an objective to study the growth performance of broiler rabbits fed with CGM based diet and study the influence of inclusion of CGM on digestibility of nutrients

Materials and Methods

Twenty four broiler rabbits (6-8 weeks old) were divided into three groups depending upon the body weight. The rabbits were offered T1, T2 and T3 diet. T1 diet containing wheat bran as major ingredient and in T2 and T3 wheat bran was replaced with corn germ meal at 50 % and 100% on w/w basis. Feeding trial was conducted for 12 week, a five days digestion trial was conducted at the end of feeding Trial where feed offered, residues and faecal samples were collected and stored for proximate analysis (AOAC, 1997) and cell wall components (Van Soest and Robertson, 1985). Ingredient composition and chemical composition of different composite diet are given in Table 1. The data were statistically analyzed as per Snedecor and Cochran (1989).

Table 1: Ingredient and chemical composition of different composite diets

Ingredients (kg/100kg)	Composite Diets		
	T1	**T2**	**T3**
Maize (ground)	15	15	15
Wheat bran	34	17	---
De oiled rice bran	34	37	39
Soyabean meal	15	12	10
Corn Germ Meal	---	17	34
Mineral Mix	1.5	1.5	1.5
Salt	0.5	0.5	0.5
Total	100	100	100
Chemical Composition			
DM	91.2	90.89	90.24
CP	16.28	17.09	17.86
EE	5.61	6.72	8.01
CF	17.04	18.61	20.17
TA	7	8.01	8.17
NFE	54.07	49.57	45.79
Fibre Fraction			
NDF	30.68	38.05	36.94
ADF	16.98	18.24	18.87
Hemicellulose	13.7	19.81	18.07
Cellulose	14.03	12.98	11.84

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Result and Discussion

Effect of corn germ meal replacing wheat bran on nutrient intake, body weight gain, FCR, nutrient digestibility and nutritive value of three groups are given in Table 2. Average DMI for CGM based diets in the present study (92.5g/d for T1, 88.4g/day for T2 and 92.8g/day for T3) are higher than values reported by Nagpure (2011) (76.54 to 82.13).

Table 2: Effect of corn germ meal replacing wheat bran on nutrient intake, body weight gain FCR

Particulars	T1	T2	T3	SEM
Performance Parameter				
DMI (g/h/d)	92.51	88.4	92.8	0.3
Weight gain (g/h/d)	11.13	15.26	11.22	0.32
FCR	8.52	5.92	8.54	0.49

The growth rates were comparable among rabbits fed T1 diet (containing wheatbran) and T3 diet (in which 100 % wheat bran substituted by CGM) but significantly ($P \leq 0.05$) higher in the T2 diet in which 50 % wheat bran substituted by CGM. The weight gain for CGM based diet (11.22-15.26 g/h/d) were in similar range (11.10-18.20 g/h/d) with the value of Nagpure (2011). The lower growth rates on all the diets can be attributed to poor genetic makeup of experimental rabbits along with tropical environment conditions as reported by Lukefahar and Cheeke (1991), who observed 10 to 20 g ADG in tropics as against 35 to 40 g under temperate climate due to heat stress. Moreover, lowered performance could be expected while using mash form of diet instead of pellet form with similar composition (Cheeke, 1987).

Average FCR during 12weeks of feeding trial ranged from 5.92 ± 0.17 (T2) to 8.54 ± 0.27 (T3). As the age of rabbits advanced the efficiency of feed utilization also declined gradually. At 12th week it was ranging from 5.86 (T2) to 12.66 (T1). The FCR for CGM (50% substitution of wheat bran) based diet was wider (1:5.92) than the reported values (1:5.7) of Herold *et al.* (1998) and was better FCR when compared with results (1:6.9) of Nagpure (2011).

Conclusion

It was concluded that dietary incorporation of CGM in broiler rabbit diet improved the nutritional performance in terms of feed intake, growth rate, efficiency of feed utilization and nutrient digestibility. Thus, CGM can be safely incorporated in broiler rabbit rations to substitute wheat bran up to 50%.

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