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DIGESTIBILITY AND RETENTION OF NUTRIENTS OF BROILERS AT DIFFERENT DIETARY LEVELS OF DEOILED RICE BRAN (DORB)

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ABSTRACT

Two hundred ten day old commercial broiler chicks divided into seven groups (T_0 - control, T_1, T_2, T_3, T_4, T_5 and T_6) of 30 chicks were allotted to four iso-nitrogenous dietary treatments, viz. D_0, D_1, D_2 and D_3, containing 0 (control), 10, 15 and 20 per cent of DORB for 6 weeks followed by a metabolic trial. T_1, T_2 and T_3 groups were offered experimental diets –D_1, D_2 and D_3 from 0-42 days and T_4, T_5 and T_6 groups were offered from 22-42 days respectively. The average body weight gain, feed consumption and feed conversion ratios did not differ significantly (P>0.05) among the groups; however, the digestibility of CF was significantly (P<0.01) higher at 10 per cent level and the retention of phosphorus was significantly (P>0.05) lower at 20 per cent level of DORB inclusion irrespective of the stages of feeding.

Key words : DORB, broilers, growth performance, digestibility, retention

Deoiled rice bran (DORB) is a by-product of rice milling industry and is available in bulk in reasonable price. DORB contains crude protein 15.97 ± 0.31, ether extract 1.27 ± 0.03, crude fibre 16.43 ± 0.14, total ash 11.53 ± 0.07 and nitrogen free extract (NFE) 54.80 ± 0.42 per cent on dry matter basis. DORB can be included in the broiler ration up to 20 per cent level without any significant effect on the performance of broilers[4]; however, some workers opined adverse effect at this level of inclusion. Therefore, the present study was undertaken to find out the feeding value of DORB at three different levels of inclusion in the broilers diets.

Two hundred ten day old commercial broiler (Vencob) chicks from a single hatch were divided randomly into seven experimental groups viz. T_0, T_1, T_2, T_3, T_4, T_5, and T_6 of 30 chicks each on live weights basis. Four iso-nitrogenous diets were prepared by incorporating 0 (D_0- control), 10 (D_1), 15(D_2) and 20(D_3) percent DORB. T_1, T_2 and T_3 groups were offered D_1, D_2 and D_3 diets respectively from 0 to 42 days; T_4, T_5, and T_6 groups were offered D0 diet upto 21 days and thereafter D_1, D_2 and D_3 diets respectively from 22 to 42 days. The Feeding trial was conducted for 42 days, followed by metabolic trial for 3 days with 5 birds from each group. The feed and faecal samples were analysed for proximate principles[1] and the data obtained were analysed statistically[6].

From the table 2 it could be observed that incorporation of DORB at different levels in broiler diet did not influence body weight gain, feed intake and feed conversion ratio significantly (P>0.05). Non-significant (P>0.05) difference in the digestibility (except CF) and retention (except phosphorus) of nutrients were observed. Finding of the present study are in agreement with other workers[3,4, 5]. The crude fibre digestibility was higher than control group at all levels of DORB inclusion, and at 10 percent level it was significantly

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(P<0.05) higher. This might be due to the fact that crude fibre in DORB was better digestible[4]. The retention of phosphorus was significantly (P<0.05) lower at 20 percent level of DORB inclusion, which might be due to the fact that 83 per cent of phosphorus in rice bran is in the phytin form and was not available. The decrease in the weight gain and increase in feed intake with increasing levels of DORB inclusion might be due to low dietary energy concentration coupled with high crude fibre levels with increasing DORB inclusion in the diets[3]. Some workers reported that the acid insoluble ash and crude fibre of rice bran were the major determinates of digestibility of nutrients[2].

Table 1: Ingredient and nutrient composition of the experimental diets

Ingredients	Starter Diet (0-21 days)				Finisher diet (22-42 days)			
	D_0	D_1	D_2	D_3	D_0	D_1	D_2	D_3
Maize	48.5	43.0	43.0	38.5	55.0	52.0	52.0	48.0
Rice polish	7.0	4.0	--	--	10.0	4.0	--	--
Groundnut cake Groundnut cake (GNC)	35.0	34.0	33.0	32.5	26.0	26.0	25.0	24.0
Fish meal	7.5	7.0	7.0	7.0	7.0	6.0	6.0	6.0
Decoiled rice bran (DORB)	--	10.0	15.0	20.0	--	10.0	15.0	20.0
Mineral mixture	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Common salt	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Composition:								
Crude protein	23.01	23.02	23.0	23.05	19.88	20.06	19.97	20.02
Ether extract	5.85	5.25	4.67	4.52	5.69	5.00	4.25	4.08
Crude fibre	5.33	6.29	6.53	7.12	4.81	5.67	6.13	6.59
Total ash	7.52	7.98	7.99	8.49	7.45	7.92	7.99	8.56

Table 2: Performance of broilers on experimental diets

Parameters	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. feed consumption/bird	2892.26	2935.18	2951.28	3029.66	2924.68	2942.15	2983.44
Av. weight gain/bird	1219.83	1206.01	1196.68	1178.04	1216.98	1211.91	1196.50
F.C.R.	2.55	2.60	2.63	2.76	2.56	2.59	2.72
Digestibility (%)							
Dry matter	63.90 ± 0.52	62.98 ± 0.22	62.44 ± 0.46	62.00 ± 0.55	63.15 ± 0.35	62.85 ± 0.33	62.20 ± 0.46
Crude protein	58.32 ± 1.04	57.92 ± 0.43	57.32 ± 0.23	56.80 ± 0.34	57.99 ± 0.30	57.75 ± 0.42	57.10 ± 0.28
Ether extract	81.93 ± 0.35	81.58 ± 0.28	81.23 ± 0.32	81.06 ± 0.31	81.14 ± 0.37	81.10 ± 0.36	80.56 ± 0.25
Crude fibre	21.36^{b} ± 0.30	24.74^{a} ± 0.31	22.38^{b} ± 0.29	22.17^{b} ± 0.21	22.73^{a} ± 0.32	21.99^{b} ± 0.25	21.40^{b} ± 0.23
Retention (%)							
Nitrogen	58.36	57.85	57.18	56.87	57.89	57.73	57.10
Calcium	53.05	52.81	52.32	51.89	52.83	52.38	52.11
phosphorus	51.30^{a}	50.86^{a}	50.00^{ab}	49.49^{b}	51.28^{a}	50.22^{ab}	49.55^{b}

NB: Values bearing same superscripts in a row did not vary significantly.

It was observed that live weight gain, feed intake and feed conversion ratio of broilers were not significantly (P>0.05) affected by inclusion of deoiled rice bran up to 20 per cent level in the diet. Hence it could be concluded that DORB can included in broiler diet at 20 percent level.

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