Abstract

A total of 40 day old chicks were collected of which half numbers were Lohman meat stain (A) and other half numbers were Ross 308 strain (B) of broiler. Each strain of chicks were grouped into the two groups that is total four groups of chicks. Both A and B group had one replicate group of each group (group C and group D). The replicate groups were deprived off providing 1% additional protein concentrate with their feeds and the A and B group provided with 1% additional protein with their supplied commercial feeds. Birds were reared for 30 days and routine vaccination and treatment were carried out. The findings indicated that the growth performance of two strain (Lohman meat and Ross 308) were same. Moreover, no significant differences was observed of feed intake, body weight gain and feed conversion ratio for two broiler strain. In this study, the recorded tabulated data showed only numerical differences. So, it is clear that the two broiler strains are the same strains in terms of growth performance, FCR and survivability.

Keywords: Broiler strain, feed conversion ratio, protein concentrate, survivability.

Introduction

Soybean meal is usually used for livestock and poultry feed as a principle source of protein. Besides, full fat soybean, soya protein concentrate, soy protein isolate, fish meal, meat and bone meal etc. are also used as protein sources. Processing of raw materials for protein concentrate causes the increasing digestibility, the absorption of nutrients, the growth rate, body weight and body weight gain. The parameters during the processing play an important role at the value of feed conversion ratio (FCR) directly or indirectly. Protein is the building block containing amino acids. In case of poultry, there are eleven essential amino acids which are required for protein synthesis in response to body growth and maintain important functions of the body. Methionine is considered to be the first limiting amino acid in poultry. Lysine, tryptophan, cysteine are the major needed amino acids among essential amino acids of poultry. The commercial poultry protein concentrate is enriched with 60 to 65 percent crude protein with proper amount of methionine, lysine, tryptophan, cysteine etc. which are required for the protein synthesis facilitating the growth performance and so huge significant rules in functions of body. Protein plays a variety of rules in biological functions, building block of cellular and sub-cellular structures of body of any individual. Enzymatic, as storage protein, hormonal, antibody function, contractile and transport of different molecules, biosynthesis of essential and non-essential amino acids, body fluid balance, synthesis of bile acids and salts, synthesis of rhodopsin etc. are major important functions of protein. So, protein concentrate additionally added with commercial feed facilitates the improving the value of FCR.

This study has done to compare the comparative growth performance Lohman meat and Ross 308 strain of broiler on the based on analysis of data in terms of feed intake, body weight gain, and feed conversion ratio by adding 1% additional protein concentrate with commercial poultry feed.

Objectives of the study:

a. To know the growth performance of two broiler stain by adding 1% additional protein concentrate with commercial poultry feed.
b. To know the acceptance of broiler strains in response to growth performance based on feed intake, FCR, mortality rate.
c. To compare the overall growth performance of the two broiler strain (Lohman meat and Ross-308)

Materials and Method

Broiler chick collection and segmentation of groups

A total of 40 chicks were collected of which half numbers were Lohman meat stain (A) and another half numbers were Ross 308 strain (B) of broiler. Each strain were sub grouped into the two groups. Both A and B group had one replicate group of each group (group C and group D). The replicate groups were deprived off providing 1% additional protein concentrate with their feeds. Both A and B group were provided with 1% additional protein with their supplied commercial Nourish broiler feed. The broilers were reared for 30 days and routine vaccination and deworming was carried out.

Management, housing and feeding: The housing system was opened conventional housing. The floor was the concrete floor, fence was the net of plastic wire. Saw dust were used as bedding material. Ventilation was good. Feeding system was adlibitum as the birds could eat by their choice. Each of four groups were separately provided with one drinker and one feed respectively. Vaccination and treatment were same in every groups. The vaccine was used against Newcastle diseases (first dose- 5^{th} day, booster dose 16^{th} day of age) and Infectious Bursal Disease (first dose- 12^{th} day, booster dose 22^{th} day of age).

The chicks were kept in brooding up to 12 days of age giving proper temperature, feeds and water. Same treatment was provided to all members if it was needed. Providing of Nourish Broiler feed (A commercial poultry feed company, Bangladesh) to A and B groups additionally added with extra 1% protein concentrate, whereas C and D group were only provided with only Nourish broiler feed without additional 1% protein concentrate. The chicks were fed with pre-starter Nourish broiler feed for first 10 days, then for 5 days with starter feed and then for next 15 days with grower broiler feed of Nourish poultry feed Company Ltd. (A reputed poultry feed company, Bangladesh).

Preparation of feed: At first, it was calculated the feed requirement of broilers according to the guide of these broiler rearing strain. More extra amount of feed was provided to A, B, C and D groups of Lohman meat (A and C group) and Ross 308 (B and D group). 1% protein concentrate was mixed with the commercial Nourish broiler feed (Pre-starter, Starter and grower feed) by manual hand mixing. Protein concentrate mixture with broiler feed was provided only to A and B groups, rather the C and D group are provided only with commercial Nourish Broiler feed. Feed was provided adlibitum as they could eat as much as.

Data Collection: The members of each group were weighted for first 10 days in all together of respective group separately. Then rather 11 to 30 days, each group was weighted by two groups to cause minimum injury and handling stress. Average weight of each boiler of each group was calculated and recorded. Average Feed intake and average weight gain were also recorded from which FCR was calculated. But there was no death history of broiler chick. Fortunately, 100% survivability was found under proper feeding, management and care. Body weight measurement was performed after 5 days interval up to 30 days. In case of feed intake, average feed intake of 5 days were calculated to calculate the FCR by matching with the values of average body weight gain.

Figures:

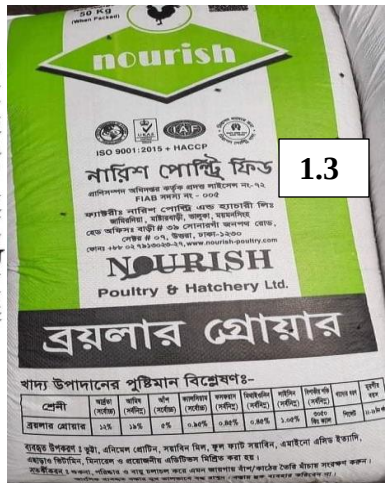

Figure 1.1 (left): Protein concentrate

Figure 1.2 (middle): Nourish starter broiler feed (crude protein 19%)

Figure 1.3(right): Nourish grower broiler feed (crude protein 20%)

Figure 1.4: Feeding of broilers.

Figure 1.5: Weighting of broilers.

Result

Table 1.1 indicates feed intake, body weight gain and feed conversion ratio of Lohman meat (A) and Ross 308 (B) almost same showing numerical slightly difference under addition of 1% protein concentrate with commercial broiler feed (A, B) and without addition of 1% protein concentrate with commercial feed (C, D). In terms of feed intake, average body weight gain and feed conversion ratio- there are no significance difference statistically between Lohman meat and Ross 308 stains of broiler. Finally, the both strains can be designated as same strain statistically showing no significance difference between the two strains in terms of feed intake, body weight gain and feed conversion ratio.

Table 1.1 Feed intake, body weight gain, feed conversion ratio of Lohman meat and Ross 308:

Age (Day)	**Parameter**	**Lohman meat A**			**Ross 308 B**			**Lohman meat C**	**Ross 308 D**
	Feed intake (gram/bird)		SEM	P value		SEM	P value		
0		0			0			0	0
5		104	0.177	0.089	102	0.177	0.089	105	100
10		305	0.462	0.764	305	0.462	0.764	300	302
15		615	1.251	0.198	620	1.251	0.198	600	625
20		1067	1.344	0.127	1080	1.344	0.127	1050	1080
25		1650	3.969	0.172	1675	3.969	0.172	1600	1680
30		2400	2.229	0.553	2410	2.229	0.553	2420	2430
Age (Day)	**Parameter**	**Lohman meat A**			**Ross 308 B**			**Lohman meat C**	**Ross 308 D**
			SEM	P value		SEM	P value		
0	**Average body weight gain (gram/bird)**	40			38			40	38
5		155	1.334	0.127	130	1.334	0.127	140	122
10		330	2.531	0.144	295	2.531	0.144	310	270
15		590	4.203	0.216	540	4.203	0.216	550	505
20		950	7.131	0.209	880	7.131	0.209	900	805
25		1350	17.962	0.907	1380	17.962	0.907	1205	1205
30		1880	17.329	0.707	1805	17.329	0.707	1700	1680
Age (Day)	**Parameter**	**Lohman meat A**			**Ross 308 B**			**Lohman meat C**	**Ross 308 D**
			SEM	P value		SEM	P value		
0	**Feed conversion ratio**	0			0			0	0
5		0.67	0.0067	0.185	0.78	0.0067	0.185	0.75	0.81
10		0.92	0.0082	0.127	1.03	0.0082	0.127	0.97	1.12
15		1.04	0.0082	0.127	1.15	0.0082	0.127	1.09	1.24
20		1.12	0.0096	0.146	1.23	0.0096	0.146	1.17	1.34
25		1.22	0.0166	0.835	1.21	0.0166	0.835	1.33	1.39
30		1.28	0.0151	0.740	1.32	0.0151	0.740	1.42	1.45

Legends:

SEM = Standard Error Mean, n (total birds) = 40

SEM = Standard mean value/√n

A, B = Treatment group (With 1% addition of protein concentrate with commercial feed)

C, D = Replicate group (Without 1% addition of protein concentrate with commercial feed)

Figure 1.2 indicates the survivability rate 100% from day 0 to day 30 under identical management, treatment and feed in both strains (Lohman meat and Ross 308) of broiler.

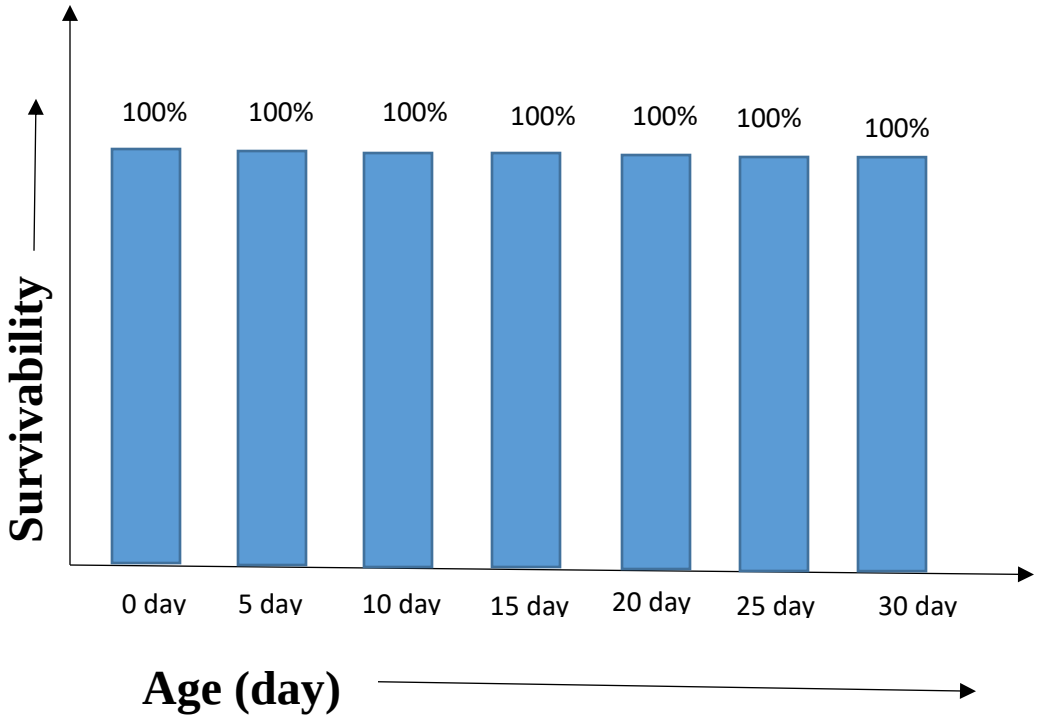

Figure: 1.2

So, it is clear that the two broiler strains are the same strains in terms of growth performance that is FCR (feed conversion ratio) and survivability.

Discussion

Feed intake: Hubbard, Arbor acres and Ross 308 strains were on treatments were significantly higher than birds on treatment Hybro PN where the first three strains (Hubbard, Arbor acres and Ross 308) had no significance difference (Abdullah Y. Abdullah et al., 2010). In between the two strains (Lohman meat, Ross 308) on treatments, the Lohman meat showed the higher feed intake significantly than Ross 308 (Husna et al., 2017). The two report was studied based on commercial feed providing. In this study, between the two strains (Lohman meat and Ross 308) have no significant difference in term of feed intake under 1% extra supply of protein concentrate with commercial broiler feed.

Body weight gain: Cobb 500 attained higher body weight gain than Ross 308 significantly (Adela Marcu et al. 2013), again the Lohman meat significantly gained higher body weight than Ross 308 (Husna et al., 2017). In term of body weight gain, there is no significant difference in between the Lohman meat and Ross 308 strain of broiler. No difference is to be providing of extra 1% additional protein concentrate with commercial broiler feed.

Feed conversion ratio: The better FCR was found significantly in Hubbard classic (FCR 2.16) strain among Hubbard classic (FCR 2.16), Arbor acres (FCR 2.17), Ross 308 (FCR 2.18) and Hybro PN (FCR 2.25) (Javid Iqbal et al., 2012). Lohman strain ($p \leq 0.05$) feed conversion ratio was higher ($p \leq 0.05$) for the Hubbard classic strain during the 2^{nd} and 3^{rd} week of age (Abdullah Y. Abdullah et al. 2010. In between Lohman meat (FCR 1.51) and Ross 308 (FCR 1.64), the Lohman meat strain showed the significant better FCR value (Husna et al. 2017). In this study, the Lohman meat and Ross 308 show the insignificant FCR values indicating same performance under the feeding of commercial broiler feed with 1% addition of protein concentrate.

Survivability rate: The Cobb 500 has the significant survivability rate among the Cobb 500, Hubbard, Arbor acres and Hybro PN strains (Javid Iqbal et al., 2012), again according to Husna et al., 2017- the Ross 308 has significant higher survivability rate than Lohman meat strain of broiler. But, in this study- there is no significant difference between the Lohman meat and Ross 308 strain in term of survivability.

So, finally it is said that there is no difference between the Lohman meat and Ross 308 strain of broiler in terms of feed intake, body weight gain, growth performance that is FCR and survivability.

Limitation

1. The study population was small size.
2. Number of study population is laboratory research purpose size. So, it should require the farm size population (five hundreds to thousands size population)
3. The study time was only for 1 month, it was needed for different months of the throughout the year of every season.

Conclusion

According to data analysis, in terms of feed intake, body weight gain, feed conversion ratio and survivability there is no difference between the two strains (Lohman meat and Ross 308). However, numerically the Lohman strain shows less feed intake, more body weight gain and better FCR than Ross 308. One percent (1%) additional protein concentrate mixing with commercial Nourish Broiler Feed manually and providing to the Lohman meat and Ross 308 strain showed the same growth performance and survivability. Therefore, it is concluded over that the both strains (Lohman meat and Ross 308) are on the same growth performance.

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Author

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Biography

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