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Research Article

Meat yield and meat quality characteristics of indigenous, Hilly♂×Sonali♀ crossbred and commercial broiler chicken of similar weight at different storage time

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Abstract

The experiment was conducted to investigate meat yield and quality characteristics of indigenous, crossbred Hilly♂ × Sonali♀ and commercial broiler chickens at similar live weight. For this purpose male and female indigenous chickens were purchased from local market, while Hilly♂ × Sonali♀ crossbred was reared up to 12 weeks at Bangladesh Agricultural University (BAU) poultry farm. Sexed male and female of Ross 308 broiler chicks were also reared BAU poultry farm up to 30 days. Six male and six female chickens from each of indigenous, Hilly♂ × Sonali♀ and commercial broiler were slaughtered, eviscerated and dissected to compare meat yield and meat quality characteristics during 0, 15 and 30 days of storage period at 1000 g (±50 g) body weight. The eviscerated and defeathered carcasses were stored at -18°C for 0, 15 and 30 days .Considering Indigenous, Hilly♂ ×Sonali ♀ and Broiler chickens of both sexes, shank, neck, carcass yield, dressed weight, breast meat weight were significantly ($p<0.05$) higher in commercial broiler while wing meat and thigh meat were higher in Hilly♂ × Sonali♀ chicken. The dry matter, crude protein were significantly higher in indigenous chicken while cooking loss, ether extract, ash, peroxide value, free fatty acid value and thiobarbituric acid value were found significantly higher in commercial broiler during different storage time in both sexes. The meat yield parameters did not differ significantly among three storage time. However, cooking loss, pH and crude protein decreased, while dry matter, ether extract, ash, peroxide vale, free fatty acid value, thiobarbituric acid value, increased with the increasing of storage time.

Introduction

Chicken is a cheap source of meat and egg protein worldwide (Ali et al., 2022a; Rahman et al., 2022). Chicken meat is termed as white meat and popularize day by day due to its high protein and low cholesterol level (Akter et al., 2022; Hossain et al., 2021; Azad et al., 2021; Das et al., 2022). Numerous nutritional and delicious meat products produced from chicken meat which fulfill the demand of protein requirement (Bithi et al., 2020; Boby et al., 2021; Disha et al., 2020; Khatun et al., 2022). Artificial genetic selection for rapid growth rate has engineered the commercial broiler chickens to the extent that they may have several undesirable characteristics such as excess deposition of adipose tissue, and inability to tolerate the stress of climatic insults and mismanagement. Broiler carcass contain high fat, less protein and higher cholesterol (Mendes et al., 1994), while indigenous chickens are widely preferred by consumers because of their lean meat (less fat and cholesterol), more protein content, taste, pigmentation and suitability for special dishes compared to the products from exotic chickens (Rahman et al., 2022; Islam and Nishibori, 2009; Rima et al., 2019). In Bangladesh, local chickens are termed as non-descriptive based on their variation mostly in morphological and production performances such as Deshi, Naked Neck, Hilly, Aseel and Jungle Fowl (Bhuiyan et al., 2005). Hilly chicken is one of the most important native chickens of Hilly areas of Bangladesh that is reared for local consumption of meat and eggs. Meat of Hilly chicken has unique taste, delicacy and popularity among consumers in Bangladesh. Local non-descript colored chicken is a vital source of tasty meat with more acceptable to rural people (Barua and Howlider, 1990). The local people always try to find the indigenous (Deshi) cockerel for its toughness and special taste (Ali and Ahmed, 2007). The heavier body size of the Hilly chickens compared to other native birds indicates that it can be used as slow growing meat type chicken in Bangladesh.

Department of Livestock Services (DLS) introduced a dual purpose crossbred (RIR♂ × Fayoumi♀) named Sonali to increase village level meat and egg production. This crossbred genotype has been reared commercially for the last two decades. Recently, the poultry farmers of Northern regions of Bangladesh are trying to practice backcrossing between Sonali female and RIR male for greater emphasis on meat production with the advantages of plumage color and better weight gain. As the farmers is practicing backcrossing of Sonali with RIR male for better weight gain, whether this type of birds is superior to the crosses of Sonali with other available local birds like hilly in Bangladesh. In our previous research we found that Hilly♂ × Sonali♀ crossbreds showed better weight gained than backcrossed Sonali chicken. However, this Hilly♂ × Sonali♀ crossbreds needs to be compare with commercial broiler and indigenous chicken for meat yield and quality characteristics for consumer acceptance.

Materials and Methods

Male and female indigenous chickens (6 in each sex) were purchased from local market around 1.0 kg of body weight. Hilly♂ × Sonali♀ crossbred were reared up to 12 weeks at Bangladesh Agricultural University poultry farm following all management procedure. Eggs were collected from foundation stock of Hilly male and Sonali female birds reared in Bangladesh Agricultural university poultry farm. Sexed male and female of Ross 308 broiler chicks were collected also reared at Bangladesh Agricultural University poultry farm. The broiler birds were reared up to 30 days to get target body weight for this experiment. Six male and six female chickens from each of indigenous, Hilly♂ × Sonali♀ and commercial broiler were slaughtered at 1000g (±50g) body weight. The eviscerated and defeathered carcasses were stored at -18°C for 0, 15 and 30 days. During 0 day, 15^{th} day and 30^{th} day of storages, the breast meat were collected from the carcass and analyzed for different proximate, physic-chemical and biochemical parameters.

Proximate composition

Proximate composition such as Dry Matter (DM), Ether Extract (EE), Crude Protein (CP) and Ash were carried out according to the standard procedures of (AOAC, 2005). All determination was done in triplicate and the mean value was reported.

pH determination

The pH of raw breast meat homogenate was determined by blending 10g of sample with 50ml of distilled water using an Ultra Turrax T25 tissue homogenizer (Janke and Kunkel, IKA Labortechnik, Staufen, Germany) at 8,000 rpm for one minute. The pH of the suspension was recorded by dipping combined glass electrode of Elico digital pH meter, Model LI 127 (Elico Limited, Hyderabad, India).

Cooking Loss

To determine cooking loss, weighed 5±1g samples and wrapped in a heat-stable foil paper and kept in water bath at 80°C for 30 minutes. Samples surface are dried and weighed. Cooking loss was calculated as the percentage of the loss weight of the cooked sample (Ali et al., 2022b). Cook loss was calculated after draining the drip coming from the cooked meat.

$$\text{Cooking Loss (\%)} = \frac{(\text{Weight before cooking of sample} - \text{weight after cooking})}{\text{Weight before cooking of sample}} \times 100$$

TBARS Analysis

Lipid oxidation was assessed in triplicate using the 2-thiobarbituric acid (TBA) method described by Schmedes and Holmer (1989). Chicken breast meat sample (5 g) was blended with 25 ml of 20% trichloro acetic acid solution (200 g/L of tricholoro acetic acid in 135 ml/l phosphoric acid solution) in a homogenizer (IKA) for 30 s. The homogenized sample was filtered with Whatman filter paper number 4, and 2 ml of the filtrate was added to 2 ml of 0.02 M aqueous TBA solution (3 g/L) in a test tube. The test tubes were incubated at 100° C for 30 min and cooled with tap water. The absorbance was measured at 532 nm using a UV-VIS spectrophotometer (UV-1200, Shimadzu, Japan). The amounts of TBARS were expressed as milligrams of malonaldehyde per kilogram of meat.

Free fatty acid analysis

Free fatty acid value (FFA) was determined according to Rukunudin et al. (1998). Five grams of sample was dissolved with 30 ml chloroform using a homogenizer (IKA T25 digital Ultra-Turrax, Germany) at 10000 rpm for 1 min. The sample was filtered under vacuum through Whatman filter paper number 1 to remove meat particles. After those five drops of 1% ethanolicphenolphthalein were added as indicator to filtrate, the solution was titrated with 0.01 N ethanolicpotassium hydroxide.

FFA (%) = ml titration× Normality of KOH × 28.2/g of sample

Peroxide value

Peroxide values of the nugget samples were determined according to AOAC (2005). One gram of sample was accurately weighed into 250 ml conical flask. Thirty ml of a mixture of glacial acetic acid and chloroform (3:2) were added to the conical flask. One gram of saturated solution of potassium iodide was added. The flask was vigorously shaken for 1 min. and kept away from the light for exactly 5min. then titrated with accurately standardized solution of 0.01N sodium thiosulphate. Titration continued until the yellow color almost disappeared. A 0.05 ml of starch indicator solution was added. Titration was performed with continuous shaking till the end point. A drop of thiosulphate was added until the blue color has just disappeared. PV was calculated as shown below:

POV %= {(A-B) ×N×100}/S

Where; B= reading of blank in ml, A= reading of sample ml, S=weight of oil sample, N= normality of sodium thiosulphate

Statistical analysis

All recorded and calculated data generated from this experiment were analyzed by analysis of variance procedure of 3 (Genotype for male or female) × 3 (Storage time) and two replication factorial design. Duncan's Multiple Range Test (DMRT) procedure was used to determine the significant differences among different means at 5% significance level (SAS, 2002).

Results and Discussion

The indigenous, crossbred Hilly♂ × Sonali♀ (HS) and commercial broiler chickens from each group having both male and female birds those were intended for slaughter at 1.00 kg live weight to compare their meat yield traits. The recorded data of each bird of male and female were live weight, blood weight, head weight, shank weight, neck weight, carcass weight, dressing weight, breast meat weight, breast bone weight, thigh meat weight, thigh bone weight, drumstick meat weight, drumstick bone weight, wing meat weight, and wing bone weight. Meat yield traits were converted into percentage of individual live weight

prior to analyzing the data statistically. Physico-chemical and biochemical data of indigenous crossbred and broiler chicken at different storage time were analyzed statistically.

Meat yield characteristics of chickens

Effect of storage period on meat yield parameters of indigenous, Hilly♂ × Sonali♀ crossbred and commercial broilers of male chicken meat at 1 kg live weight is shown in Table 1 & 2. The present findings revealed that male carcass weight (73.72 ± 0.46%), shank weight (4.48±0.16%), dressing weight percentage (62.70±0.45%), breast meat yield (15.61±1.14%) were the highest in commercial broiler, the corresponding values in HS crossbred were 66.60±0.48%, 3.78±0.22%, 58.34±0.44%, 11.01±0.12% and in indigenous chicken these values were 63.08±0.81%, 3.21±0.06%, 54.96±0.42%, 10.87±0.40%, respectively. But head weight (3.76±0.27%), wing meat weight (4.17±0.07%), thigh meat weight (7.63±0.06%) were found the highest in HS crossbred chicken than others two groups during 30 days of storage under freezing conditions. Differences were significant for breast meat weight, carcass weight, dressing weight (%) among indigenous, crossbred and commercial broiler chicken. In addition, significant differences were also found in thigh meat weight, wing meat weight, neck weight and shank weight among the considered three genotypes. Commercial broiler yielded higher breast meat weight, carcass weight and dressing weight than that of indigenous and HS crossbred chicken. Among the 3 storage period, meat yield parameters did not show significant differences. Among the three types, commercial broiler was found to be superior for meat yield traits than other two genotypes. In case of female birds, similar trends were found for the traits breast meat weight, carcass weight, dressing weight where commercial broiler yielded better than that of indigenous and HS crossbred chicken which is shown in the Table 3 & 4.

Our result agrees with Sandercock et al. (2009) that fast growing broiler has more breast meat than traditional indigenous chickens. The carcass yield of four breeds of local chicken was slightly lower than that reported for Italian local chickens (De Marchi et al., 2005) and Benin local chickens (Youssao et al., 2012), and markedly lower than that reported for commercial broilers (Zhang et al., 2010; Panda et al., 2010). Nielsen et al. (2003) and Farzana et al. (2017) reported that slow-growing chickens were characterized by a lower breast yield, but higher yield of thigh and drumstick meat than fast-growing chickens. These results are similar to this present study. Ali et al. (2022b) did not found any significant differences in meat yield characteristics among 4 Sonali derived crossbred chickens.

Table 1. Carcass, dressing, blood, head, shank and neck weight percentage compare to live weight of Indigenous, Hilly♂ × Sonali♀ crossbredand commercial broiler during different storage time (male)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
Live wt. (g)	0	1014.5±31.5	1007.5±12.5	1039.0±6.0	**1020.33±16.67**	0.42	0.06	0.81
	15	996.0±8.0	1008.5±23.5	1017.5±17.5	**1007.33±16.33**			
	30	1035.0±15.0	1051.5±5.5	1043.5±2.5	**1043.33±7.67**			
	Mean	**1015.17±18.17**	**1022.5±13.83**	**1033.33±8.67**	-			
Blood wt. (%)	0	3.46±0.44	4.20±0.12	3.71±0.07	**3.79±0.21**	0.06	0.85	0.99
	15	3.47±0.03	4.17±0.10	3.56±0.47	**3.73±0.20**			
	30	3.65±0.32	4.38±0.36	3.64±0.64	**3.89±0.44**			
	Mean	**3.53±0.26**	**4.25±0.19**	**3.64±0.39**				
Head wt. (%)	0	3.88±0.19	3.65±0.28	3.66±0.22	**3.73±0.23**	0.88	0.87	0.86
	15	3.76±0.02	3.78±0.29	3.66±0.37	**3.73±0.23**			
	30	3.28±0.15	3.85±0.23	3.74±0.54	**3.62±0.31**			
	Mean	**3.64±0.12**	**3.76±0.27**	**3.69±0.38**	-			
Shank wt. (%)	0	3.32±0.04	3.55±0.28	4.43±0.17	**3.77±0.16**	0.0004	0.81	0.76
	15	3.12±0.08	3.79±0.29	4.53±0.18	**3.81±0.18**			
	30	3.19±0.06	4.00±0.08	4.49±0.12	**3.89±0.09**			
	Mean	**3.21±0.06^{c}**	**3.78±0.22^{b}**	**4.48±0.16^{a}**	-			
Neck wt. (%)	0	3.68±0.30	2.73±0.40	4.53±0.22	**3.65±0.31**	<.0001	0.28	0.67
	15	4.07±0.09	2.95±0.21	4.77±0.07	**3.93±0.12**			
	30	4.23±0.11	2.81±0.13	4.49±0.12	**3.84±0.12**			
	Mean	**3.99±0.17^{b}**	**2.83±0.25^{c}**	**4.60±0.14^{a}**	-			
Carcass wt. (%)	0	63.04±0.44	66.79±0.46	73.01±0.09	**67.61±0.33**	<.0001	0.35	0.65
	15	62.65±0.81	65.72±0.99	74.06±0.34	**67.48±0.71**			
	30	63.54±1.19	67.29±0	74.08±0.94	**68.30±0.71**			
	Mean	**63.08±0.81^{c}**	**66.6±0.48^{b}**	**73.72±0.46^{a}**	-			
Dressed wt. (%)	0	54.11±0.09	58.07±0.42	62.56±0.6	**58.25±0.19**	<.001	0.88	0.17
	15	53.92±0.07	57.78±0.90	63.74±0.26	**58.48±0.41**			
	30	53.85±1.10	59.16±0.12	61.97±0.49	**58.33±0.53**			
	Mean	**54.96±0.42c**	**58.34±0.44b**	**62.70±0.45a**	-			

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Table 2. Breast meat and bone, thigh meat and bone, drumstick meat and bone, and wing meat and bone percentage compare to live weight of Sonali derived crossbred chicken during different storage time (male)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
Breast meat wt. (%)	0	10.31±0.27	11.39±0.17	16.32±1.01	**12.67±0.48**	<.0001	0.46	0.63
	15	10.29±0.78	10.95±0.19	14.47±1.23	**11.90±0.73**			
	30	10.04±0.16	10.70±0.18	16.04±1.17	**12.26±0.44**			
	Mean	**10.87±0.40^{b}**	**11.01±0.12^{b}**	**15.61±1.14^{a}**	-			
Breast bone wt. (%)	0	5.16±0.58	4.71±0.02	5.87±0.06	**5.25±0.21**	0.0062	0.54	0.99
	15	5.23±0.65	4.86±0.02	6.15±0.16	**5.41±0.28**			
	30	5.03±0.62	4.43±0.03	5.76±0.00	**5.07±0.21**			
	Mean	**5.14±.62^{b}**	**4.67±0.02^{b}**	**5.93±0.07^{a}**	-			
Thigh meat wt. (%)	0	6.54±0.03	7.85±0.11	6.65±0.14	**7.01±0.09**	<.0001	0.15	0.25
	15	6.48±0.01	7.34±0.07	6.48±0.28	**6.77±0.12**			
	30	6.21±0.16	7.71±0.14	6.66±0.13	**6.8±.10**			
	Mean	**6.41c±0.07**	**7.63a±0.06**	**6.6ob±0.18**	-			
Thigh bone wt. (%)	0	2.04±0.01	1.57±0.14	2.27±0.14	**1.96±0.10**	0.047	0.49	0.67
	15	2.06±0.07	2.05±0.32	2.27±0.14	**2.13±0.18**			
	30	2.07±0.09	1.93±0.28	2.31±0.20	**2.22±0.10**			
	Mean	**2.06±0.06^{ab}**	**1.85±0.15^{b}**	**2.28±0.16^{a}**	-			
Drumstick meat (%)	0	5.82±0.33	6.38±0.15	6.06±0.45	**6.09±0.31**	0.08	0.62	0.89
	15	5.48±0.01	6.35±0.25	5.90±0.10	**5.91±0.12**			
	30	5.67±0.38	6.00±0.13	5.95±0.38	**5.87±0.25**			
	Mean	**5.66±0.24**	**6.24±0.13**	**5.97±0.31**	-			
Drumstick bone wt. (%)	0	3.78±0.09	3.75±0.08	3.86±0.22	**3.80±0.13**	0.0537	0.17	0.43
	15	3.76±0.02	3.68±0.19	4.28±0.13	**3.91±0.11**			
	30	3.68±0.05	3.52±0.08	3.78±0.25	**3.66±0.1**			
	Mean	**3.74±0.05**	**3.65±0.09**	**3.97±0.20**	-			
Wing meat wt. (%)	0	3.68±0.22	3.90±0.02	3.76±0.08	**3.78±0.11**	0.002	0.59	0.24
	15	3.37±0.03	4.37±0.20	3.99±0.22	**3.91±0.15**			
	30	3.48±0.05	4.23±0.26	3.92±0.11	**3.88±0.04**			
	Mean	**3.51±0.08^{b}**	**4.17±0.07^{a}**	**3.89±0.14^{a}**	-			
Wing bone wt. (%)	0	2.76±0.10	2.79±0.24	2.70±0.02	**2.75±0.12**	0.22	0.26	0.21
	15	2.76±0.07	2.78±0.16	3.05±0.15	**2.86±0.13**			
	30	2.69±0.04	3.14±0.11	2.93±0.05	**2.92±0.03**			
	Mean	**2.74±0.07**	**2.90±0.10**	**2.89±0.07**				

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Table 3. Carcass, dressing, blood, head, shank and neck weight percentage compare to live weight of Indigenous, Hilly♂ × Sonali♀ crossbredand commercial broiler during different storage time (female)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Cross	Broiler	Mean	G	D	G*D
Live wt (g)	0	1025.0±33.0	994.0±4.0	1037.5±32.5	**1018.83±23.17**	0.08	0.93	0.56
	15	1007.5±12.5	1000.0±5.0	1050.5±14.5	**1019.33±10.67**			
	30	1007.5±2.5	1027.5±7.5	1036.0±6.0	**1023.67±5.33**			
	Mean	**1013.33±16.0**	**1007.17±5.5**	**1041.33±17.67**	-			
Blood (%)	0	3.16±0.14	3.93±0.31	3.81±0.27	**3.63±0.24**	0.03	0.99	0.80
	15	3.27±0.40	4.30±0.52	3.38±0.09	**3.65±0.34**			
	30	3.13±0.10	4.09±0.36	3.70±0.52	**3.64±0.33**			
	Mean	**3.19±0.21^{B}**	**4.11±0.40^{A}**	**3.63±0, 29^{AB}**	-			
Head (%)	0	3.14±0.06	3.02±0.19	3.78±0.30	**3.31±0.18**	0.32	0.59	0.17
	15	3.40±0.07	4.00±0.22	3.24±0.05	**3.55±0.11**			
	30	3.12±0.19	3.55±0.02	3.56±0.66	**3.41±0.29**			
	Mean	**3.22±o.11**	**3.52±0.14**	**3.53±0.34**	-			
Shank wt. (%)	0	2.84±0.10	2.91±0.28	4.25±0.32	**3.33±0.23**	0.004	0.46	0.81
	15	2.94±0.09	3.82±1.01	4.48±0.16	**3.75±0.42**			
	30	2.73±0.36	3.55±0.02	4.25±0.17	**3.51±0.18**			
	Mean	**2.84±o.18^{b}**	**3.430±0.10^{b}**	**4.43±0.22^{a}**	-			
Neck (%)	0	3.16±0.14	3.02±0.21	4.27±0.22	**3.48±0.19**	<.0001	0.81	0.90
	15	3.12±0.07	2.85±0.16	4.36±0.32	**3.44±0.18**			
	30	3.08±0.25	3.07±0.13	4.48±0.08	**3.54±0.15**			
	Mean	**3.12±0.15^{b}**	**2.98±0.17^{b}**	**4.37±0.21^{a}**	-			
Carcass (%)	0	60.72±1.77	66.05±0.62	73.68±0.35	**66.82±0.91**	<.0001	0.74	0.22
	15	62.60±0.78	66.45±0.02	72.68±0.10	**67.24±0.30**			
	30	62.14±0.22	64.91±0.38	73.65±0.33	**66.9±0.31**			
	Mean	**61.82±0.92^{c}**	**65.80±0.34^{c}**	**73.34±0.26^{a}**	-			
Dressed (%)	0	55.41±0.07	57.80±0.28	62.82±0.73	**58.68±0.36**	<.0001	0.38	0.21
	15	54.24±0.32	58.65±0.16	59.26±0.18	**57.38±0.22**			
	30	53.59±0.36	56.84±0.32	62.79±0.22	**57.74±0.30**			
	Mean	**54.41±0.25^{c}**	**57.76±0.25^{b}**	**61.62±o.38^{a}**	-			

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Table 4. Breast meat and bone, thigh meat and bone, drumstick meat and bone, and wing meat and bone percentage compare to live weight of Sonali derived crossbred chicken during different storage time (female)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
Breast meat (%)	0	10.28±0.64	11.92±0.10	16.31±0.42	**12.84±0.39**	<.0001	0.49	0.42
	15	11.25±0.06	11.15±0.30	15.31±1.31	**12.57±0.56**			
	30	11.59±0.73	11.53±0.06	16.31±0.00	**13.14±0.26**			
	Mean	**11.04±0.48^{b}**	**11.53±0.15^{b}**	**15.98±0.58^{a}**	-			
Breast bone (%)	0	5.07±0.13	4.43±0.09	5.10±0.32	**4.87±0.18**	<.0001	0.49	0.42
	15	5.56±0.29	4.85±0.07	5.24±0.36	**5.22±0.24**			
	30	5.24±0.32	4.29±0.07	5.12±0.46	**4.88±0.28**			
	Mean	**5.29±0.25^{ab}**	**4.52±0.08^{b}**	**5.15±0.38^{a}**	-			
Thigh meat (%)	0	6.22±0.87	7.55±0.48	6.83±0.66	**6.87±0.67**	0.005	0.85	0.73
	15	6.64±0.23	7.80±0.06	6.76±0.19	**7.07±0.16**			
	30	6.26±0.31	8.28±0.04	6.47±0.33	**7.00±0.23**			
	Mean	**6.37±0.47^{b}**	**7.88±0.19^{a}**	**6.69±0.39^{b}**	-			
Thigh bone (%)	0	1.72±0.02	1.62±0.11	2.35±0.26	**1.90±0.13**	0.0004	0.96	0.89
	15	1.78±0.06	1.70±0.11	2.21±0.15	**1.90±0.11**			
	30	1.74±0.09	1.66±0.10	2.22±0.08	**1.87±0.09**			
	Mean	**1.75±0.06^{b}**	**1.66±0.11^{b}**	**2.26±0.16^{a}**	-			
Drumstick meat (%)	0	5.23±0.13	6.49±0.08	6.07±0.30	**5.93±0.17**	0.005	0.93	0.62
	15	5.63±0.58	6.65±0.08	5.72±0.27	**6.00±0.28**			
	30	5.39±0.06	6.28±0.10	6.08±0.45	**5.92±0.20**			
	Mean	**5.42±0, 26**	**6.470±0.09**	**5.96±0.34**	-			
Drumstick bone (%)	0	2.80±0.44	3.35±0.27	3.71±0.16	**3.29±0.29**	0.018	0.85	0.82
	15	2.86±0.80	3.43±0.41	3.67±0.09	**3.32±0.43**			
	30	2.29±0.24	3.61±0.13	3.58±0.08	**3.16±0.15**			
	Mean	**2.65±0.49^{b}**	**3.46±0.27^{a}**	**3.65±0.11^{a}**	-			
Wing meat (%)	0	2.97±0.13	3.42±0.01	3.99±0.41	**3.46±0.18**	0.0097	0.65	0.23
	15	3.25±0.02	3.80±0.32	3.76±0.29	**3.60±0.21**			
	30	3.20-±0.13	4.09±0.23	3.53±0.03	**3.61±0.13**			
	Mean	**3.14±0.09^{b}**	**3.77±0.19^{a}**	**3.76±0.24^{a}**	-			
Wing bone (%)	0	2.66±0.19	2.52±0.32	2.56±0.13	**2.58±0.21**	0.82	0.53	0.52
	15	2.59±0.06	2.50±0.09	2.53±0.37	**2.54±0, 17**			
	30	2.49±0.11	2.97±0.03	2.66±0.07	**2.71±0.07**			
	Mean	**2.58±0.12**	**2.66±0.15**	**2.58±0.19**	-			

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Proximate analysis

Values of proximate components are shown in Table 5 and 6.

Dry Matter (DM)

The dry matter content of different genotypes of male with days of intervals is shown in Table 5. The overall observed average dry matter content at indigenous, crossbred, commercial broiler was 26.26±0.17%, 25.07±0.47%, 24.7±0.27% respectively. There were significant differences observed for dry matter among the genotypes as well as storage periods. Among three genotypes the most preferable dry matter content was observed from indigenous group and the least preferable dry matter content was observed from commercial broiler. The dry matter content was increased with the increase of storage period because of moisture loss. The dry matter content was observed in indigenous, crossbred and broiler at30th day as 27.06±0.15, 25.70±0.20% and 25.20±0.60%, respectively and at day 0 to be 25.37±0.26, 24.25±0.73 and 23.38±0.09%, respectively. The most preferable dry matter content was found from indigenous chicken compared to crossbred and commercial broiler meat.
Similar results were found in female chicken which are shown in Table 6. Tougan et al. (2013) showed that the highest dry matter and protein contents were recorded in Holli ecotype (P<0.01), whereas the highest fat content was found in Fulani ecotype. The free range chickens showed the highest protein content (P <0.001), whereas chickens from confinement breeding had the highest fat content (P<0.05). Protein content was higher in breast than in thigh (P <0.001), while dry matter, ash and fat contents were higher in thigh meat than in breast meat (P <0.001). The dry matter content decreased with age (P <0.001), while the fat content increased (P<0.01). This result is similar to Tougan et al. (2013). Ali et al. (2022b) also found that with increasing storage period dry matter increased also agreed with our present result.

Table 5. Proximate composition of Indigenous, Hilly♂× Sonali♀ crossbred and broiler chicken breast meat during different storage time (male)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler		G	D	G*D
DM%	0	25.37±0.26	24.25±0.73	23.38±0.09	**24.33±0.36^{b}**	0.001	0.001	0.88
	15	26.35±0.11	25.26±0.49	25.02±0.11	**25.54±0.24^{a}**			
	30	27.06±0.15	25.70±0.20	25.20±0.60	**25.99±0.32^{a}**			
	Mean	**26.26±0.17^{a}**	**25.07±0.47^{b}**	**24.7±0.27^{b}**				
CP%	0	23.80±0.33	23.42±0.05	22.97±0.22	**23.40±0.20^{a}**	0.0002	0.0001	0.28
	15	23.51±0.01	22.49±0.37	22.55±0.13	**22.85±0.17^{b}**			
	30	22.97±0.05	22.05±0.10	21.51±0.10	**22.18±0.08^{c}**			
	Mean	**23.43±0.13^{a}**	**22.65±0.17^{b}**	**22.34±0.15^{b}**				
EE%	0	1.24±0.09	1.31±0.19	1.63±0.07	**1.39±0.12^{c}**	0.01	<.0001	0.54
	15	2.49±0.01	2.59±0.06	2.72±0.10	**2.60±0.06^{b}**			
	30	2.78±0.04	2.90±0.02	2.95±0.02	**2.88±0.03^{a}**			
	Mean	**2.17±0.15^{b}**	**2.27±0.09^{b}**	**2.43±0.06^{a}**				
Ash%	0	1.23±0.07	1.32±0.05	1.68±0.07	**1.41±0.06^{c}**	<.0001	0.0004	0.95
	15	1.38±0.06	1.44±0.05	1.78±0.06	**1.53±0.06^{b}**			
	30	1.49±0.02	1.61±0.01	1.92±0.04	**1.67±0.02^{a}**			
	Mean	**1.37±0.05^{c}**	**1.46±0.04^{b}**	**1.79±0.06^{a}**				

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Table 6. Proximate composition of Indigenous, Hilly♂ × Sonali♀ crossbred and broiler chicken breast meat during different storage time (female)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
DM%	0	25.57±0.36	24.15±0.25	23.34±0.02	**24.35±0.21^{c}**	<.0001	0.0001	0.56
	15	26.01±0.07	25.31±0.01	24.52±0.35	**25.28±0.14^{b}**			
	30	27.29±0.54	25.83±0.18	25.11±0.20	**26.08±0.31^{a}**			
	Mean	**26.29±0.32^{a}**	**25.10±0.15^{b}**	**24.32±0.19^{c}**				
CP%	0	23.60±0.15	23.00±0.15	22.60±0.02	**23.07±0.11^{a}**	0.0001	0.0002	0.20
	15	22.99±0.14	22.36±0.31	21.13±0.63	**22.16±0.36^{b}**			
	30	22.32±0.34	21.83±0.06	20.07±0.17	**21.41±0.19^{a}**			
	Mean	**22.97±0.21^{b}**	**22.40±0.17^{b}**	**21.27±0.27^{c}**				
EE%	0	1.25±0.10	1.56±0.01	1.63±0.03	**1.48±0.05^{c}**	<.0001	<.0001	0.16
	15	2.36±0.04	2.53±0.03	2.69±0.04	**2.53±0.04^{b}**			
	30	2.68±0.02	2.72±0.06	2.88±0.06	**2.76±0.15^{a}**			
	Mean	**2.10±0.05^{c}**	**2.27±0.03^{b}**	**2.40±0.04^{a}**				
Ash%	0	1.24±0.15	1.39±0.07	1.68±0.02	**1.44±0.08^{c}**	0.0003	0.0034	0.85
	15	1.43±0.05	1.50±0.05	1.74±0.06	**1.56±0.05^{b}**			
	30	1.57±0.01	1.62±0.04	1.88±0.04	**1.69±0.03^{a}**			
	Mean	**1.41±0.07^{b}**	**1.50±0.05^{b}**	**1.77±0.04^{a}**	-			

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Crude Protein (CP)

The crude protein content of different genotypes of male with the day of intervals are shown in Table 5. The overall average crude protein contents in indigenous, crossbred and broiler chicken were 23.43±0.13, 22.65±0.17 and, 22.34±0.15% respectively and differed significantly among the 3 genotypes. The different storage periods had also highly significant influence for CP contents among the genotypes. The CP content was decreased with the increased storage period. The most preferable CP content was observed from 0 day and less amount of CP content was observed at 30th day of storage. The data shows that the amount of CP content was decreased in all three genotypes at 30 days of storage. The highest CP content was observed at 0 day in indigenous, crossbred and broiler were 23.80±0.33%, 23.42±0.05% and 22.97±0.22%, respectively and the lowest CP content at 30th day were 22.97±0.05%, 22.05±0.10% and 21.51±0.10% respectively. Similar results were found in female chicken which are shown in Table 6. Kandeepan and Biswas (2007) showed a decrease in protein content of buffalo meat with increase in storage period while studying effect of low temperature preservation on quality and shelf life of buffalo meat. Ali et al. (2022b) also found a significant decrease in protein content with increase in storage period. All of these findings support the present findings.

Ether Extract (EE)

The ether extract content in different genotypes of male with different days of intervals is shown in Table 5. The mean ether extract content in indigenous, crossbred and broiler chickens were 2.17±0.15 2.27±0.09 and 2.43±0.06%, respectively. The EE contents were varied significantly for genotypes and storage periods. The lowest amount of EE content was found in Indigenous chicken that indicates the most preferable meat producers for consumers' health. The EE content was increased with the increased storage period. The data shows that the amount of EE content was increased in the three genotypes after 30 days of storage. The most preferable EE content was observed at starting 0 day were 1.24±0.09%, 1.31±0.19%, 1.63±0.07% and less preferable EE content at 30th day were 2.78±0.04%, 2.90±0.02% and 2.95±0.02% in indigenous, crossbred and broiler meat, respectively. In comparison to three genotypes chicken the most preferable EE was found in indigenous2.78±0.04% chicken and

less preferable EE in crossbred2.90±0.02% and broiler2.95±0.02% chickens respectively. Similar trends in the results were found in female chicken which are shown in Table 6.

Ash

The Ash content of different genotypes of male with days intervals are shown in Table 5. The overall observed average ash content in indigenous, crossbred and broiler were 1.37±0.05, 1.46±0.04 and 1.79±0.06% respectively. There were significant differences of ash content observed among the genotypes of different storage period. The ash content was significantly changed with the increased storage period. The data shows that the amounts of ash content were increased in the three genotypes after 30 days of storage. The ash contents observed from 0 day were 1.23±0.07, 1.32±0.05 and 1.68±0.07% and at 30th day were 1.49±0.02, 1.61±0.01 and 1.92±0.04% in indigenous, crossbred and broiler meat, respectively. The data revealed that the lowest amount of ash content was observed from 0 day and the highest content obtained from 30th day. Among the three genotypes, the lower ash content was found in indigenous breast meat and higher amount ash content was found in crossbred and broiler. Similar results were found in female chicken are shown in Table 6. Mbaga et al. (2014) showed that ash contents were similar in the two sexes. Breast meat had higher (P<0.05) CP and ash content than meat cuts from the leg and is inconsistent to the present study.

Physico-chemical properties

Cooking loss

The Cooking losses of different genotypes of male with days of intervals are shown in Table 7. The observed average cooking loss in indigenous, crossbred and broiler chicken meat was measured as 20.6±0.32, 22.09±0.59 and 23.08±0.23%, respectively. There were significantly differences found in cooking loss parameter among the genotypes of different storage periods. Higher amount of cooking loss was observed in commercial broiler and crossbred groups compared to indigenous chicken group. The cooking loss was significantly changed with the increased storage period. The most preferable cooking loss was observed from 30th day and less preferable was from day 0. The most preferable cooking loss were observed from at 30th day of storage in indigenous, crossbred and broiler meat measured as 19.91±0.15, 21.04±0.58 and 22.39±0.43%) and less preferable cooking loss was from day 0 as 21.61±0.53, 22.80±0.73 and 23.80±0.10%, respectively. In comparison among the genotypes most preferable cooking loss was from indigenous chicken and less preferable cooking loss was observed in crossbred and commercial broiler. Similar results were found in the female chickens which are shown in Table 8. The cooking loss was significantly changed with the increased storage period. The cell structure could be destructed and particularly shrinkage of the connective tissue during the cooking losses (Tornberg, 2005). Furthermore, cooking loss in meats depend on ultimate pH (Mushi et et al., 2009) and intramuscular fat content (Safari et al., 2010).

pH value

The pH values of different genotypes of male with days of intervals are shown in Table 7. The mean pH value at indigenous, crossbred and commercial broiler chicken meat were 6.25±0.03, 5.97±0.03and 6.02±0.06, respectively. Although there was no significant difference found in pH value among the genotypes, but the storage periods had significant difference (p<0.01) for this parameter. The data showed a slight decrease in the pH value and increase in the acidity values for all samples along with storage period. The pH value was decreased with the increased storage period. The most preferable pH value for indigenous, crossbred and broiler chicken meat were observed from day 0 6.9±0.04, 6.11±0.04 and 6.12±0.04, respectively and less preferable pH were measured at 30th day 5.88±0.03, 5.89±0.04 and5.93±0.03, respectively. In comparison among the genotypes the most preferable pH value was from indigenous chicken compared to broiler and crossbred chicken. The interaction between genotype and number of storage days did not show significant difference (p>0.05). Similar results were found in female chicken where there was no significant difference (p>0.05) found in pH value among the genotypes and the storage periods found significant difference (p<0.01) which are shown in the Table 8. Verma et al. (2015) showed that pH value decreased with the increase of storage period while studying the effect of storage on nutritional, physico-chemical, microbial, texture profile and sensory quality of chicken meat incorporated noodles at ambient temperature. This finding is consistent with the present study.

Table 7. Physico-chemical properties of Indigenous, Hilly♂ × Sonali♀ crossbred and broiler chicken breast meat during different storage time (male)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
Cooking loss (%)	0	21.61±0.53	22.80±0.73	23.80±0.10	**22.74±0.45^{a}**	0.0002	0.004	0.74
	15	20.28±0.28	22.43±0.46	23.06±0.16	**21.92±0.30^{b}**			
	30	19.91±0.15	21.04±0.58	22.39±0.43	**21.11±0.39^{c}**			
	Mean	**20.6±0.32^{c}**	**22.09±0.59^{b}**	**23.08±0.23^{a}**				
pH	0	6.9±0.04	6.11±0.04	6.12±0.04	**6.38±0.04^{a}**	0.41	0.001	0.85
	15	5.96±0.03	5.91±0.01	6.00±0.10	**5.96±0.15^{b}**			
	30	5.88±0.03	5.89±0.04	5.93±0.03	**5.90±0.03^{b}**			
	Mean	**6.25±0.03**	**5.97±0.03**	**6.02±0.06**				

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Table 8. Physico-chemical properties of Indigenous, Hilly♂ × Sonali♀ crossbred and broiler chicken breast meat during different storage time (female**)**

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
Cooking loss (%)	0	22.20±0.60	23.51±0.33	24.21±0.09	**23.31±0.34^{a}**	0.0001	<.0001	0.73
	15	20.23±0.08	21.88±0.17	22.75±0.38	**21.62±0.21^{b}**			
	30	19.20±0.30	20.32±0.40	20.79±0.27	**20.10±0.32^{c}**			
	Mean	**20.54±0.33^{c}**	**21.90±0.30^{b}**	**22.58±0.25^{a}**				
pH	0	6.11±0.04	6.10±0.04	6.10±0.05	**6.10±0.04^{a}**	0.051	<.0001	0.29
	15	5.92±0.03	5.96±0.02	6.05±0.04	**5.98±0.03^{b}**			
	30	5.82±0.03	5.86±0.02	5.93±0.02	**5.87±0.02^{c}**			
	Mean	**5.95±0.03**	**5.97±0.03**	**6.03±0.04**				

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Biochemical analysis

There are three types of biochemical properties investigated in this study. These are Peroxide Value (POV-meq/kg), Free Fatty Acid value (FFA %), Thiobarbituric Acid value (TBARS-mgMA/kg). These parameters indicate the good or bad quality of meat.

Peroxide Value (POV-meq/kg)

Peroxide value of different treatment levels of male with day intervals are shown in Table 9that the POV increased with storage time. The overall observed average POV of indigenous, crossbred and commercial broiler chicken were 0.9±0.02, 0.97±0.02 and 1.06±0.03%, respectively. With different storage periods at 0, 15th and 30thdays had significant differences (p<0.01) among the genotypes. The POV values were increased with the increment of storage period. The most preferable POV was observed at 0 day and less preferable POV was observed at 30th day of observation. The POV values in indigenous, crossbred and broiler meat were observed at 0 day 0.69±0.04, 0.78±0.02 and 0.85±0.03%, respectively while at 30th day the values were1.11±0.01, 1.15±0.01 and 1.26±0.04%, respectively. In comparison among the treatment groups, the most preferable POV was found from indigenous chicken and less preferable POV were from crossbred and broiler chicken. Similar results were found in female chicken where there was significant difference (p>0.01) found of POV value among the genotypes which are shown in Table 10. The present findings are consistent with the findings of Das et al. (2008) who reported a significant increase in peroxide value of the meat samples during refrigerated storage.

Free Fatty Acid value (FFA %)

Free fatty acid value (FFA) of different treatment levels of male with day intervals are shown in Table9. FFA results appeared to be consistent with those of POV. The observed averages FFA of indigenous, crossbred and commercial broiler meat were 1.13±0.03, 1.19±0.06 and 1.35±0.04% respectively. Genotype and storage period had highly significant effects on FFA. Table 9 showed that the FFA value increased with storage time. The most preferable FFA was observed from 0 day and less preferable FFA was observed from 30th day of observation. The most preferable FFA of indigenous, crossbred and broiler meat were found at day 0 as0.92±0.03, 0.91±0.06 and 1.02±0.03%, respectively. Besides, the highest FFA was found at 30th day among the three genotypes as 1.36±0.04, 1.45±0.05 and 1.69±0.07% respectively. In comparison among the treatment groups the most preferable FFA was from indigenous and less preferable FFA were crossbred and broiler chickens. Similar results were found in female chicken where there was significant difference (p>0.01) found of FFA value among the genotypes which are shown in the Table 10. Verma et al. (2015) showed that FFA value increased with the increase of storage period while studying the effect of storage on nutritional, physico-chemical, microbial, texture profile and sensory quality of chicken meat incorporated noodles at ambient temperature. This finding is in agreement with the present study.

Thiobarbituric Acid Value

Thiobarbituric acid values of different treatment levels of male with day intervals are shown in Table 9. Generally, TBA levels significantly (P < 0.05) increased with storage time, showing decreasing shelf life. There had been significant difference (p<0.01) observed among the genotypes throughout the storage period. The malondialdehyde content of all samples increased significantly with the advancement of storage time shown in Table 9. The average TBARS values of indigenous, crossbred and broiler meat were 0.15±0.01, 0.18±0.01and 0.21±0.01% respectively. It is normally accepted that TBARS value increases in meat with increasing storage time, although the pattern of increased TBARS value in different species has not yet well understood. The most preferable TBARS of indigenous, crossbred, broiler chicken meat value was observed at day 0 as 0.08±0.01, 0.11±0.01 and 0.13±0.01%, respectively whereas less preferable TBARS values were found at 30thday of observation as 0.23±0.01, 0.26±0.01and 0.27±0.01%, respectively. In comparison among the treatment groups the most preferable TBARS value was found in indigenous chicken as compared to crossbred and commercial broiler chickens. Similar results were found in female chicken which are shown in Table 10. Verma et al. (2015) showed that TBARS value increased with the increase of storage period. The above stated findings are in agreement with the present results.

Table 9. Biochemical analysis of indigenous, Hilly♂ × Sonali♀ crossbred and broiler chicken breast meat during different storage time (male)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
POV (meq/kg)	0	0.69±0.04	0.78±0.02	0.85±0.03	**0.77±0.03^{c}**	<.0001	<.0001	0.74
	15	0.90±0.01	0.97±0.02	1.07±0.02	**0.98±0.02^{b}**			
	30	1.11±0.01	1.15±0.01	1.26±0.04	**1.17±0.02^{a}**			
	Mean	**0.9±0.02^{c}**	**0.97±0.02^{b}**	**1.06±0.03^{a}**	-			
FFA (%)	0	0.92±0.03	0.91±0.06	1.02±0.03	**0.95±0.04^{c}**	0.001	<0.0001	0.22
	15	1.12±0.02	1.20±0.06	1.33±0.03	**1.22±0.04^{b}**			
	30	1.36±0.04	1.45±0.05	1.69±0.07	**1.50±0.15^{a}**			
	Mean	**1.13±0.03^{b}**	**1.19±0.06^{b}**	**1.35±0.04^{a}**	-			
TBARS (mg malonaldehyde/ kg)	0	0.08±0.01	0.11±0.01	0.13±0.01	**0.11±0.01^{c}**	0.0001	<0.0001	0.22
	15	0.14±0.02	0.17±0.02	0.22±0.00	**0.18±0.01^{b}**			
	30	0.23±0.01	0.26±0.01	0.27±0.01	**0.25±0.01^{a}**			
	Mean	**0.15±0.01^{c}**	**0.18±0.01^{b}**	**0.21±0.01^{a}**	-			

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Table 10. Biochemical analysis of indigenous, Hilly♂ × Sonali♀ crossbred and broiler chicken breast meat during different storage time (female)

Parameter	Day (D)	Different Genotypes (G)				Level of Significance		
		Indigenous	Crossbred	Broiler	Mean	G	D	G*D
POV (meq/kg)	0	0.75±0.01	0.82±0.02	0.90±0.03	**0.82±0.02^{c}**	0.0002	<.0001	0.78
	15	0.92±0.03	1.00±0.02	1.09±0.03	**1.00±0.03^{b}**			
	30	1.08±0.06	1.18±0.03	1.30±0.02	**1.19±0.04^{c}**			
	Mean	**0.92±0.03^{c}**	**1.00±0.02^{b}**	**1.10±0.03^{a}**	-			
FFA (%)	0	0.90±0.05	0.94±0.04	1.03±0.01	**0.96±0.03^{c}**	<.0001	<0.0001	0.003
	15	1.09±0.01	1.24±0.04	1.39±0.01	**1.24±0.02^{b}**			
	30	1.24±0.05	1.48±0.03	1.75±0.03	**1.49±0.04^{a}**			
	Mean	**1.08±0.04^{c}**	**1.22±0.04^{b}**	**1.39±0.02^{a}**	-			
TBARS (mg malonaldehyde/ kg)	0	0.09±0.01	0.11±0.01	0.14±0.02	**0.11±0.01^{c}**	<.0001	<0.0001	0.23
	15	0.15±0.01	0.24±0.01	0.25±0.01	**0.21±0.01^{b}**			
	30	0.21±0.02	0.27±0.02	0.29±0.01	**0.26±0.02^{a}**			
	Mean	**0.15±0.01^{c}**	**0.21±0.01^{b}**	**0.23±0.01^{a}**	-			

Values indicate mean ± SE, mean in each column/row having different superscript varies significantly at values *P < 0.05; **P<0.01. D=Days of interval, G= Genotype, G*D=Interaction of Genotype and Day of Interval

Conclusion

In male and female; shank, neck, carcass yield, dressed weight, breast meat weight were significantly ($p<0.05$) higher in commercial broiler while wing meat and thigh meat were higher in Hilly♂ × Sonali♀ crossbred and indigenous chicken. The dry matter, crude protein were significantly higher in indigenous chicken while cooking loss, ether extract, ash, peroxide value, free fatty acid value and thiobarbituric acid value were found significantly higher in commercial broiler during different storage time in both sexes.

Conflicts of Interest

The authors declare that there are no potential conflicts of interests.

Reference:

Akter R, Hossain MA, Khan M, Rahman MM, Azad MAK, Hashem MA. 2022. Formulation of value-added chicken meatballs by addition of Centella leaf (*Centella asiatica*) extracts. Meat Research, 2: 2, Article No. 18. https://doi.org/10.55002/mr.2.2.18

Ali MA, Ahmed ST. 2007. Performance of Synthetic, Dehsi, Synthetic × Deshi and Synthetic × Star cross brown chicken at marketing. Proceedings of the 5th International Poultry Show and Seminar, WPSA- Bangladesh Branch, 01-03 March, pp 18-25.

Ali MS, Rahman MM, Habib M, Kabir MH, Hashem MA, Azad MAK, Rahman MM. 2022a. Quality of spent hen sausages incorporated with bee honey. Meat Research, 2: 1, Article 9. https://doi.org/10.55002/mr.2.1.9

Ali MH, Habib M, Bhuiyan MSA, Azad MAK, Hashem MA, Ali MS. 2022b. Meat yield and meat quality characteristics of backcrossed Sonali chicken compared to Aseel♂ × Sonali♀ and Hilly♂ × Sonali♀ crossbreds. Meat Research, 2: 3, Article 24, https://doi.org/10.55002/mr.2.3.24

AOAC. 2005. Official methods of analysis (18th edition) Association of official Analytical, Chemists international, Maryland, USA.

Azad MAK, Kikusato M, Zulkifli I, Rahman MM, Ali MS, Hashem MA, Toyomizu M. 2021. Comparative study of certain antioxidants - electrolyzed reduced water, tocotrienol and vitamin E on heat-induced oxidative damage and performance in broilers. Meat Research, 1: 1, Article 7. DOI: https://doi.org/10.55002/mr.1.1.7

Barua A, Howlider MAR. 1990. Prospect of native chickens in Bangladesh. Poultry Advisor, 23: 57-61.

Bhuiyan AKFH, Bhuiyan MSA, Deb GK. 2005. Indigenous chicken genetic resources in Bangladesh: current Status and future outlook. Animal Genetic Resources Information Bulletin, 36: 73-84.

Bithi MAA, Hossain MA, Rahman SME, Rahman MM, Hashem MA. 2020. Sensory, nutritive, antioxidant and antimicrobial activity of telakucha (Coccniacordifolia) leaves extract in broiler meatballs. Journal of Meat Science and Technology, 8(2): 23-31.

Boby F, Hossain MA, Hossain MM, Rahman MM, Azad MAK, Hashem MA. 2021. Effect of long coriander leaf (*Eryngium foetidum*) extract as a natural antioxidant on chicken meatballs during at freezing temperature. SAARC Journal of Agriculture, 19(2): 271-283.

Das A, Hashem MA, Azad MAK, Rahman MM. 2022. Edible oil marination in broiler meat for short term preservation. Meat Research, 2: 3, Article 22. https://doi.org/10.55002/mr.2.3.22

Das AK, Anjaneyulu ASR, Verma AK, Kondaiah N. 2008. Physicochemical, textural, sensory characteristics and storage stability of goat meat patties extended with full-fat soy paste and soy granules. International Journal of Food Science and Technology, 43: 382-392.

De Marchi M, Dalvit C, Targhetta C, Cassandro M. 2005.Assessing genetic variability in two ancient chicken breeds of Padova area. Italian *Journal of Animal Science*, 4:151-153.
Disha MNA, Hossain MA, Kamal MT, Rahman MM, Hashem MA. 2020. Effect of different levels of lemon extract on quality and shelf life of chicken meatballs during frozen storage. SAARC Journal of Agriculture, 18(2): 139-156.
Farzana N, Habib M, Ali MH, Hashem MA, Ali MS. 2017. Comparison of meat yield and quality characteristics between indigenous chicken and commercial broiler. The Bangladesh Veterinarian, 34: 61 – 70.
Hossain MS, Rokib M, Habib M, Kabir MH, Hashem MA, Azad MAK, Rahman MM, Ali MS. 2021. Quality of spent hen sausages incorporated with fresh ginger extract. Meat Research, 1: 1, Article 4. https://doi.org/10.55002/mr.1.1.4
Islam MA, NishiboriM 2009: Indigenous naked neck chicken: a valuable genetic resource for Bangladesh. World's Poultry science Journal, **65**: 125-138.
Kandeepan G, Biswas S. 2007. Effect of domestic refrigeration on keeping quality of buffalo meat. Journal of Food Technology, 5: 29-35.
Khatun MM, Hossain MA, Ali MS, Rahman MM, Azad MAK, Hashem MA. 2022. Formulation of value-added chicken nuggets using carrot and ginger as a source of dietary fiber and natural antioxidant. SAARC J. Agric, 20 (1): 185-196.
Mbaga SH, Sanka YD, Katule AM, Mushi D. 2014. Tanzania Journal of Agricultural Sciences, 13: 48-54.
Mendes, A. A., Garcia, E. A., Gorzales, E. and Politi, S. 1994. Effect of strain on carcass yield in broilers. Poultry Abstract, 20: 103.
Mushi DE, Safari J, Mtenga LA, Kifaro GC and Eik LO. 2009. Effects of concentrate levels on fattening performance, carcass and meat quality attributes of Small East African×Norwegian crossbred goats fed low quality grass hay. Livestock Science, 124:148-155
Nielsen BL, Thomsen MG, Rensen PS, Young JF. 2003. Feed and strain effects on the use of outdoor areas by broilers. British Poultry Science, 44 161-169.
Panda AK, Raju M, Rao SR, Lavanya G, Reddy EPK, Sunder GS. 2010. Replacement of normal maize with quality protein maize on performance, immune response and carcass characteristics of broiler chickens. Asian Australasian Journal of Animal Sciences, 23: 1626-1631.
Rahman MA, Hossain MA, Rahman MM, Ali MS, Hossain MM, Hashem MA. 2022. Growth performance and meat quality of rice fed broiler and native chicken genotypes in Bangladesh. Meat Research, 2: 3, Article 23. DOI: https://doi.org/10.55002/mr.2.3.23
Rima FJ, Sadakuzzaman M, Hossain MA, Ali MS, Hashem MA. 2019. Effect of gamma irradiation on shelf life and quality of broiler meat. SAARC Journal of Agriculture, 17: 149-159.
Rukunudin IH, White PJ, Bern CJ, Bailey TB. 1998. A modified method for determining free fatty acids from small soybean sample sizes. Journal of the American Oil Chemists' Society, 75**:** 563–568.
Safari JG, Mushi DE, Mtenga LA, Kifaro GC, Eik LO. 2010. Growth, carcass yield and meat quality attributes of Red Maasai sheep fed wheat straw-based diets. Tropical Animal Health and Production, 43:89-97.
Sandercock DA, Nute GR, Hocking PM. 2009. Quantifying the effects of genetic selection and genetic variation for body size, carcass composition, and meat quality in the domestic fowl (*Gallus domesticus*). Poultry Science, 88**:** 923-931.
SAS. 2002. SAS Softwear for PC. SAS Institute Inc., Cary, NC, USA.
Schmedes A, Holmer G. 1989. Anew thiobarbituricacid (TBA) method for determining free malondialdehyde (MDA) and hydroperoxides selective Elyasameasure of lipid peroxidation. Journal *of the* American Oil Chemists' *Society*, 66: 813–817.
Tougan PU, Dahouda M, Salifou CFA, Ahounou GS, Kossou DNF, Amenou C, Kogbeto CE, Kpodekon MT, Mensah GA, Lognay G, Thewis A, Youssao IAK. 2013. Nutritional quality of meat from local poultry population of Gallus gallus species of Benin, Journal of Animal & Plant Sciences, 19: 2908-2922.
Tornberg E. 2005. Effects of heat on meat proteins – Implications on structure and quality of meat products. Meat Science, 70: 493–508.
Verma AK, Pathak V, Umaraw P, Singh VP. 2015. Effect of storage on nutritional, physico-chemical, microbial, texture profile and sensory quality of chicken meat incorporated noodles at ambient temperature. Indian Journal of Poultry Science, 50: 191-196.
Youssao AKI, Assogba NM, Alkoiret TI, Dahouda M, Idrissou ND, Kayang BB, Yapi-Gnaoré V, Assogba HM, Houinsou AS, Ahounou S, Tougan UP, Rognon X, TixierBoichard M. 2012.Comparison of growth performance, carcass characteristics and sensory characters of Benin indigenous chickens and Label Rouge (T55×SA51). African Journal of Biotechnology, 11: 15569- 15579.
Zhang Y, Ma Q, Bai X, Zhao L, Wang Q, Ji C, Liu L, Yin H. 2010. Effect of dietary acetyl-Lcarnitine on meat quality and lipid metabolism in Arbor Acres broilers. Asian Australasian Journal of Animal Sciences, 23: 1639-1644.