Meat Research
Vol 2, Issue 2 Article 16
ISSN: 2790-1971
https://doi.org/10.55002/mr.2.2.16
http://www.bmsa.info/meatresearch

[1]Department of Animal Science and Nutrition, Faculty of Veterinary Medicine and Animal Science, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur-1706, Bangladesh.

[2]Department of Animal Science, Faculty of Animal Husbandry, Bangladesh Agricultural University, Mymensigh-2202, Bangladesh.

[3]Department of Dairy and Poultry Science, Faculty of Veterinary Medicine and Animal Science, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur-1706, Bangladesh.

***Corresponding author:**

Dr. A.B.M. Rubayet Bostami, Associate Professor, Department of Animal Science and Nutrition, Faculty of Veterinary Medicine and Animal Science, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur-1706, Bangladesh. Email: rubayet@bsmrau.edu.bd

Article Info
Received: 21st February, 2022
Accepted: 24th March, 2022
Published online: 30th April, 2022

Keywords

Chicken
Meat composition
Physico-chemical traits
Sensory evaluation

Research Article

Physico-chemical parameters and sensory attributes of different chicken meat of consumer's choice from poultry market

ABM Rubayet Bostami[1*], MRI Khan[2], ASM Selim[1], MD Hossain[1], M Khairunnesa[3]

Abstract

Generally, consumers prefer the indigenous chicken meat compare to commercial chicken like sonali or broiler chicken because of their concept of having more nutritious and palatability and ready to pay more. Whether the concept is true or not, and on which aspects, indigenous chicken meat is superior compare to that of commercially reared chicken, validation is required. Therefore, an experiment was conducted to compare the carcass characteristics, meat proximate composition, physico-chemical parameters and sensory attributes of indigenous/deshi, sonali and broiler chicken that are available in the poultry market of Bangladesh. Three types of finisher chicken: indigenous/deshi, sonali and broiler chicken were bought from local market of Bangladesh. Birds were slaughtered following halal method; carcass traits and meat quality parameters were analyzed after collection and processing of meat samples. Result indicated that, there is a variation in the carcass characteristics, proximate composition, physico-chemical attributes and sensory evaluation. Broiler chicken live weight, slaughter weight and abdominal fat was higher as compared to sonali and indigenous/deshi chicken ($P<0.05$). The dry matter, crude protein and ether extract was higher in deshi chicken followed by sonali and broiler chicken ($P<0.05$). Drip loss and cooking loss was higher in broiler chicken followed by sonali and deshi chicken, while pH_{24} was lower in deshi chicken followed by sonali and broiler chicken ($P<0.05$). Broiler chicken meat was more tender in relation to sonali and deshi chicken ($P<0.05$), where flavor of deshi chicken meat was higher as compared to the broiler chicken ($P<0.05$). Result suggested that, based on level of status of people, consumers can choose indigenous or deshi chicken due to better proximate composition and meat flavour; however, sonali and broiler chicken are also acceptable by the consumers with higher carcass weight and meat tenderness with short interval to become marketable weight and cheap price which can be afford by all class of people to meet their protein demand, eventually can secure national human health.

Introduction

Different types of livestock and poultry species are available around the world and meat is obtained from that species. Availability of different livestock and poultry species vary due to geographical location. Peoples of different location obtained their meat for consumption historically from the period of hunting and gathering. Gradually, the consumption of meat and their processing method upgraded due to human civilization and consumer demand. Usually, poultry meat is mostly consumed meat all over the world due lack of religious or taboo barrier. Different country and region has different indigenous stock of poultry species, for long time people reared them for their own consumption as a family farming. However, due to rapid growth of global population, elevated demand of meat and creation of business opportunity in poultry farming, triggers commercialization of poultry rearing and consider it as poultry industry. With a view to meet the nutritional demand of growing population, genetic as well as nutritional research was conducted gradually to lessen the duration of marketable weight of different poultry species.

Among poultry species, success story is very high for the chicken, where through selective breeding, genetic improvement and nutritional management make tremendous change in formation of consummation meat naturally within a short time. Continuous research and effort on chicken research make possible for general consumers to eat meat every day with low cost, the outcome of the research is broilers, which is available around the world as well as in Bangladesh. Where, Sonali is another chicken which are also the result of genetic and nutritional approaches to meet the protein demand of people in Bangladesh. So, indigenous chicken, which are naturally grown and maintained by the family of different region of Bangladesh, they usually collect their feed from outside and usually takes longer time to become marketable weight to slaughter and eat their meat; sonali chicken are such types of chicken which shows similar types of phenotypic characters like indigenous chicken, however, they are commercially reared, becomes marketable weight within shorter time as compared to indigenous chicken but longer than broiler chicken; where broiler chicken are commercial chicken, growth rate is very high, therefore reach in the marketable weight within very short time as compared to both indigenous and sonali chicken, usually provided

balanced ration to meet their nutritional requirements.

Poultry meat has an important role in human nutrition because of its nutritive value. The quality of the poultry meat can be assessed by several attributes, chemical composition (proximate analysis), sensory attributes (colour, tenderness, flavour, juiciness, palatability, overall acceptability), physico-chemical traits (muscle yield, water-holding capacity, cooking loss, drip loss, pH) and which vary with growth rate and body composition (Akter et al., 2009; Bithi et al., 2020; Disha et al., 2020; Hossain et al., 2021; Khawaja et.al., 2013; Sarker et al., 2021). There are many aspects of meat quality from poultry, which may be affected by type of production system, temperature, internal house environment, genotype, sex, age, stocking density, animal welfare, diet and other factors. Meat quality and consistency are important in ensuring consumer satisfaction. Quality of meat is affected by the genetic propensity of the animal, how the animal is reared, and the nutritional status during production (Miller, 2002). Indigenous chickens are genetically non-descriptive types, plays pivotal role in household nutrition and serve generating source for the rural poor families in most countries of Asia, Africa and Latin America (Norris et al., 2007 and Swatson et al., 2001).

In Bangladesh indigenous chicken produce 75% of the eggs and 78% meat consumed domestically (Bhuiyan et al., 2005). Non descriptive or deshi chicken in Bangladesh are called indigenous and managed by local farmers on a small-scale basis in natural environments without much interference from farmers. Deshi chickens spend most of their time in outdoors, running around and scratching the dirt for worms or insects, then supplementing their diet with household scraps. This means that they deal with the normal issues of growing up, including fighting for their food, trying to escape from predators, etc. which manifests into the taste and texture of these birds. Generally, indigenous chicken possesses a firmer texture and more flavor, particularly after cooking, than do commercial broilers (Wattanachant et al., 2004). Meat of indigenous chicken is deep, complex flavor, lower fat content and a higher muscle mass compared to broiler chicken. The consumer preferred indigenous chicken meat and egg for decade after decade and consumer's attraction towards indigenous chicken will also remain unchanged in future as because of their special smell, taste and texture (Mengesha, 2012, Das et al., 2014). Commercial chicken meat contains higher fat than indigenous chicken whereas the value of crude fibre is vice versa (Ezhilvalavan et al., 2016). Many people love the flavour of country chicken which are not commercially produced, but are also faced with issues like tough, gamey birds that take quite a long time to cook. However, broiler chickens are a huge favorite in the country because their meat is guaranteed to be tender as well as being more affordable, and more readily available.

Although several researches have been conducted on nutritional study to examine the growth performance and meat quality of broiler chicken, however, to the best of our knowledge there is no wide research on different types of chicken which are usually consumed by the consumers of Bangladesh focusing on meat quality. Therefore, the objective of the present study was to compare the carcass characteristics, meat proximate composition, physico-chemical attributes and sensory evaluation of different chicken available in poultry market of Bangladesh.

Materials and Methods

Birds slaughtering and sample preparation

A total of 30 female birds were collected for following three groups' deshi, sonali and broiler chicken having 10 birds in each group. Birds which are usually in the finishing stage and ready for the consumers to buy and eat was collected from the local market where age and other factors were not considered. According to the poultry shop keepers the age of deshi, sonali and broiler chicken estimated to be 20-21 weeks, 11-12 weeks and 4-5 weeks respectively. After collection of the healthy birds were fasted 8 hours before slaughter and live body weight were taken followed by slaughter in halal methods and allowed around 2 minutes for complete bleeding. Following slaughter, carcass characteristics were recorded. Meat samples from each of replicates were stored at 4°C until analyzed for proximate composition, physico-chemical and sensory evaluation.

Carcass characteristics

After collection of different types of chicken from poultry market and observed the health conditions by experts. From broiler, sonali and deshi chicken 10 birds of each group were randomly selected, fasted and live weight were recorded before and after slaughter. After complete bleeding, skin was removed, head, neck and legs were separated, visceral organs were removed to keep the record of dressed weight followed by dissection. The following parameters were recorded simultaneously during slaughtering and processing; live weight, dressed weight, dressing percentage, abdominal fat, thigh weight, breast weight and other parts weight. Then dressing percentage was calculated as the ratio between the carcass weight and live body weight.

Proximate Analysis

Moisture was determined by oven method (AOAC, 1999); crude protein determined was by Kjeldahl method (AOAC, 1999). Fat as ether extract was determined by the Soxhlet apparatus method (AOAC, 1999); and ash was determined with a muffle furnace at 600°C (AOAC, 1999).

Physico-chemical analysis

Drip loss determination

Drip loss measurement was modified from Zhang et al., (2004). Briefly, 30 g (wet weight, W1) of muscle from the breast portion was taken and put in a plastic bag. Subsequently, all bags were sealed, attached in a refrigerator, and stored at 4°C for 24 h. After 48 h, the samples were taken out and filter paper was used to gently wipe out the liquid, and the meat was reweighed (W2). The difference in weight of each sample before and after hanging was expressed as percentage drip loss and calculated as follows:

$$\text{Drip loss} = \frac{\text{Initial weight} - \text{Final weight}}{\text{Initial weight}} \times 100$$

Cooking loss determination

After the surface connective tissue and fat were removed from the meat sample, the sample was cut into pieces about 2.5 cm thick. Then they were weighed and packed in plastic bags, which then were put in the preheated digital thermostat water bath at 85°C to be heated to the temperature of 78°C. This was monitored by a thermometer inserted into the thickest part of each sample to test the core temperature. When they were taken out, they were cooled to room temperature and then the packaging was destroyed, meat was taken out, and the surface moisture was absorbed with filter paper, and meat sample was weighed. The considering the before and after weight of meat sample the cooking loss rate was calculated as follows:

Cooking loss (CL %) is expressed as the principle expreesed by Saba et al. (2018):

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

where, w_2 = liver weight before cooking and w_3 = liver weight after cooking.

Measurement of pH of meat

The pH of the meat was determined using a pH meter (Hanna, Romania). About 3 g of meat sample was cut into small pieces and homogenized with 27 ml of distilled water for 60 s in an Ultra Turrax (Janken & Kunkel, T25, Germany). The homogenized samples were then filtered in a falcon tube, after which the pH value was measured using a pH meter and recorded.

Sensory evaluation of meat

Sensory evaluation of meat samples was analyzed following the sensory profile procedure (International Standards Organization, 2003). Breasts and thigh meat were cooked in a prewarmed 100°C oven to a final temperature of 70°C. Samples were removed from the oven and tempered 15 min in the pan before preparation for the sensory analysis. Samples were prepared by cutting a 2-cm-wide strip parallel to the fibers. This strip was then cut into 2 or 3 cubes of 2 cm. Samples were placed in prewarmed glass custard dishes that were nested in ceramic cups to maintain the serving temperature (50°C). Sample containers were presented to panelists in individual sensory evaluators for data collection. Panelists provided different samples for sensory analysis and suggested to rinse the mouth with water to differentiate each sample. A trained descriptive analysis panel (n = 10) was used in this study. The sample cooking and presentation to panelists followed a monadic sequence at 20-min intervals to allow for fatigue recovery between samples. Sample order presentations to panelists were randomized across sessions. For each parameter sensory evaluators were suggested to follow 1 to 10 score, where 1 indicated lowest and 10 indicated highest value. Sensory evaluation procedure was followed with modification of Rizzi et al., (2007).

Statistical analyses

All data was subjected to ANOVA using the General Linear Models (GLM) function of the Statistical Analysis System (SAS, 2013, SAS Institute, Cary, NC, USA). Each group of chicken was considered as the experimental unit for carcass traits, blood analysis, meat composition and quality analysis. Significant differences among the means were determined using Duncan's multiple range test. A probability level of $P<0.05$ was considered as statistically significant and a level of $P<0.10$ was considered as statistical tendency.

Results and Discussion

Carcass characteristics of different chicken

Table 1 shows the carcass characteristics of different types of chicken available to the poultry market of Bangladesh. Result reveals that, the live weight, slaughter weight, carcass weight and abdominal fat percentage of broiler, sonali and deshi chicken were different in the current study ($P<0.05$). Although the the dressing percentage was higher in case of broiler relative to that of sonali and deshi chicken, there was no statistical difference. Other parameters show no difference among chicken types ($P<0.05$). Where all the birds were collected from the poultry market at the finishing stage which are ready for the consumers to buy and eat following slaughtering. According to FAO (2015) the survey report of 2012, the body weight of broiler chicken at 31 days, and sonali chicken at 12.0 weeks of age were 1.64 kg and 0.85 kg, respectively. Average slaughter weight for deshi chicken varies between 1.0-1.3 kg reported by Okada et al., 1987, which was a little bit different than that of the result of present study. The age of slaughter was not considered in the present study and this may be the reason of weight deviation with previous reports. The growth rate is high for broiler followed by sonali and deshi chicken which is completely related with genetic potentiality, rearing system and nutritional support. As broiler and sonali chicken are developed for meat purpose and reared intensively, while deshi chicken reared extensively where less attention is paid on nutritional supply to the birds. The significant difference was not observed in the other body parts of three different chicken genotype available in Bangladesh.

Havier birds have more fat than those slaughtered at lower weight (Miguel et al., 2011). In the present study although there was higher value for breast and thigh meat percentage (% of live weight) and dressing percentage in case of broiler, sonali and deshi chicken, however, they did not differ significantly. Consistent result also reported by Zhang et al., (2004) and Chen et al., (2008) who found almost similar percentage for native chicken. Furthermore, they found comparatively better dressing percentage for Chinese native chicken. Higher breast and thigh muscle may be the possible cause of higher DP% for commercial hybrid chicken in Bangladesh that is supported by some studies that standard commercial broilers had greater carcass traits than those of Chinese native breeds at market age (Wang et al., 2006, 2009; Tang et al., 2009). Genetic potentiality and faster growth rate along with better nutritional support, intensive management and comparatively less movement or exercise of the broiler chicken might be attributed to higher abdominal fat deposition relative to that of sonali and deshi chicken. It was reported that the two Italian breeds, with different genetic origins from European, American, or both purebreds, presented differences on some productive and carcass characteristics (Rizzi et al., 2002).

Table 1. Carcass characteristics of broiler, sonali and deshi chicken

Parameter	Broiler	Sonali	Deshi	SEM	P-value
Live weight (kg/bird)	2.18[a]	0.89[b]	0.75[c]	0.03	<0.0001
Slaughter weight (kg/bird)	2.05[a]	0.78[b]	0.64[c]	0.03	<0.0001
Carcass weight (kg/bird)	1.77[a]	0.71[b]	0.60[c]	0.02	<0.0001
DP%	81.17	80.12	79.33	1.14	0.539
Breast %	15.80	14.40	14.40	0.56	0.156
Thigh %	11.50	11.00	10.70	0.35	0.296
Abdominal fat %	2.22[a]	1.84[b]	1.64[b]	0.11	0.003

DP%: Dressing percentage, SEM: Standard error of mean, Values in the same raw followed by different superscript letters differ at P<0.05.

Meat proximate composition of different chicken

Table 2 shows the meat composition of different types of chicken that are usually available to the market for the consumers of Bangladesh. Chicken is a good and cheapest source of protein, low in fat, which is less saturated than beef fat (Jorge Soriano, 2009). Nutrient composition of meat did differ among different types of available chicken. Surprisingly, there was a difference in dry matter, crude protein and ether extract content among three types of chicken (P<0.05). The meat quality can be affected by the different degree of maturity of the strains at slaughter age (Castellini et al., 2002). The chemical composition of meat can be affected by genotype, production system, diet and other factors (Castellini et al., 2006; Fanatico et al., 2007; Meluzzi et al., 2009). The highest levels of protein and ether extract recorded for the exotic meat strain, Hybro and the lowest recorded for the native chicken Bare Neck in Sudan (Yousif et al., 2014). Tang et al., (2009) demonstrated that, meat from slow growing genotypes contain higher fat as compare to the fast-growing genotypes, which support the current result where deshi chicken as slow growing genotypes exhibited higher fat content followed by sonali and broiler chicken as fast or medium growing genotypes.

The age at slaughter and the growth rate might be the reason of variation in dry matter, crude protein and ether extract of different chicken genotypes; because indigenous chicken usually slaughtered at the minimum age of 20-21 weeks whereas sonali and broiler chicken slaughtered at 12-13 and 4-5 weeks of age, respectively. Fanatico et al., (2007) reported that, slow growing as well as outdoor rearing bird's meat exhibits higher protein content. The result of fat content result was inconsistent with other studies which showed that slow-growing genotypes exhibited lower fat content in the breast and thigh muscle while compared with fast-growing genotypes (Fanatico et al., 2007; Meluzzi et al., 2009; Zhao et al., 2009). Dry matter content of broiler meat of current study supported the report of USDA, 2006 which was 25.4%. Age, strain, variety, production system might be attributable to the variation between results in present and previous reports. Further detail study can warrant the variation in meat composition among the different chicken genotypes of the current study.

Table 2. Meat proximate composition of broiler, sonali and deshi chicken

Parameter	Broiler	Sonali	Deshi	SEM	P-value
DM %	25.26[c]	28.69[b]	29.94[a]	0.34	<0.0001
CP %	22.59[c]	24.44[b]	25.56[a]	0.25	<0.0001
EE %	0.90[c]	1.63[b]	2.21[a]	0.15	<0.0001
CF %	0.14	0.15	0.18	0.03	0.670
Ash %	1.25	1.28	1.35	0.03	0.137

DM: Dry matter, CP: crude protein, EE: Ether extract, CF: Crude fiber, SEM: Standard error of mean, Values in the same raw followed by different superscript letters differ at P<0.05.

Physico-chemical parameters of different chicken meat

The meat physico-chemical parameters of different types of chicken were shown in Figure 1. Result demonstrated that, the cooking loss and drip loss differed among the chicken genotypes where broiler chicken exhibited higher followed by sonali and deshi chicken (P<0.05). Meat pH_{24} was differed among broiler, sonali and deshi chicken (P<0.05). Guan et al., (2013) reported lower drip loss percentage of Chinese native chicken compared to commercial chicken. Broilers are young than sonali and deshi chicken that contain more moisture. This may be result of higher drip loss and cooking loss of commercial broiler chicken. Castellini et al., (2002) reported that, less mature chicken shows higher cooking loss which is consistent with the present study where broiler chicken meat shows higher cooking loss followed by sonali and deshi chicken. Tang et al., (2009) demonstrated that, slow growing genotypes exhibits lower cooking loss and higher fat as compare to the fast-growing genotypes, which support the current result where deshi chicken as slow growing genotypes exhibited lower cooking loss followed by sonali and broiler chicken as fast-growing genotypes.

Meat pH has a direct bearing on the meat quality attributes such as tenderness, water-holding capacity, colour, juiciness and shelf life. The pH of food is important in the development of flavours in the Maillard reaction (Calkins and Hodgen, 2007). It has indicated by many research that initial muscle pH determines some physico-chemical traits such as water holding capacity, colour, cooking loss or tenderness of heat-treated meat (Jakubowska et al., 2004). The fast-growing (broiler) birds do not struggle as much, and their pH is decline slowly. This is may be possible cause of higher pH in broiler in first 24 hours. It is a fact that the rapid growth influences the late maturing tissues (i.e. fat) and that a higher body weight is correlated with enhanced glycolytic energy metabolism and with higher acidification (Ouhayoun, 1998). Where it was affirmed that the muscle ultimate pH is lower in heavy rabbits, but greater acidification does not influence in elevation of cooking loss (Ouhayoun and Dalle Zotte

(1993). Castellini et al. (2002) also reported an analogous trend in the three chicken strains. Current result support the previous result of Castellini et al. (2002) and mechanism explained by Ouhayoun, (1998) and Ouhayoun and Dalle Zotte (1993) regarding the variation among physico-chemical attributes of different chicken genotypes. Meat pH of pig reared in indoor vs outdoor facility also support the result of the present study. Van der Wal et al., (1993) and Enfält et al., (1997) reported lower pH in case of outdoor reared pig's muscle in relation to the pigs reared in indoor facilities.

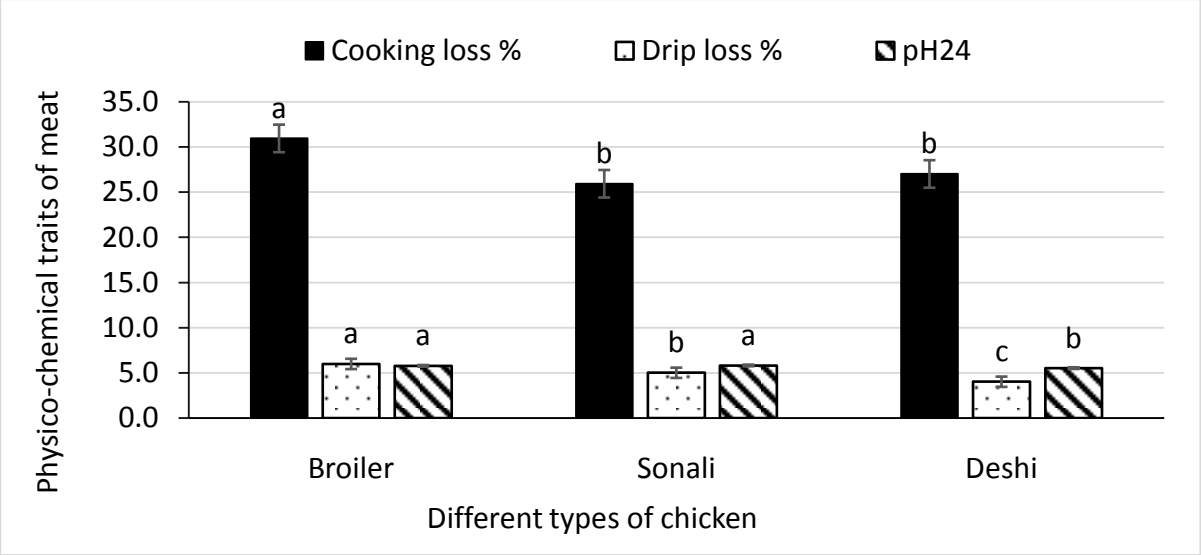

Figure 1. Physico-chemical parameters of meat from broiler, sonali and deshi chicken

Values in the similar bar followed by different superscript letters differ at P<0.05.

Sensory evaluation of different chicken meat

Sensory evaluation of different chicken meat was shown in the Table 4. A number of factors affect poultry meat colour that include sex, age, strain, processing procedures, chemical exposure, cooking temperature, irradiation, and freezing conditions. Meat tenderness is the most important factor in consumer judgment related to meat palatability or quality of meat products (Ali et al., 2022; An et al., 2010), which determines consumers' ultimate satisfaction of poultry meat and meat products (Fletcher, 2002). Flavor is another quality attribute that consumers use to determine the acceptability of poultry meat (Mir et al., 2017). Uddin et al., (2021) reported no statistical difference of sensory parameters between non-descriptive deshi and nacked neck chicken of Bangladesh. In the present study sensory attributes data stated that the flavor was higher in deshi chicken compared to sonali and broiler chicken whereas tenderness was higher in case of broiler chicken compare to deshi chicken meat (P<0.05). Other sensory attributes did not differ significantly among the different chickens of the present study (P>0.05).

The result of the present study was inconsistent with (Dyubele et al., 2010) who compared broiler and indigenous chicken and found higher sensory scores in broiler chicken. The flavor of meat depends on the composition of fatty acids present in the meat (Calkin & Hodgen, 2007). Chemical reactions during cooking release many substances, such as volatile compounds, that give aroma and flavor to meat (Aliani & Farmer, 2005). Higher tenderness of boiler meat may be the reason of young age with faster growth rate. Consumer interest in flavorsome meat from indigenous slow-growing chickens is mostly demanded in many countries of the world despite its relatively high price, however, low price, total production cost, short duration to get consumable meat and to fulfil the national protein demand, both the sonali and broiler chicken are acceptable for low to medium income peoples who are not able to buy the indigenous/deshi chicken. The capability of a panel to discriminate different types of meat or to differentiate meat from fast-growing to slow growing genotypes is a matter of debate (Richardson and Mead, 1999). Several authors have delineated the significant differences but the consequence of genotype often interrelates with the age: for example, usually it requires longer rearing period in case of slow-growing chickens in relation to fast-growing chicken which will ultimately affect the total cost of production and other related factors. Farmer et al., (1997), who reported a significant discrimination of meats from various poultry genotypes, had the interaction of age-genotype.

Table 4. Meat sensory attributes of broiler, sonali and deshi chicken

Parameter	Broiler	Sonali	Deshi	SEM	P-value
Color	6.45	6.67	6.60	0.09	0.220
Flavour	5.22^{b}	5.39^{b}	5.87^{a}	0.14	0.008
Tenderness	6.32^{a}	5.32^{b}	4.38^{c}	0.23	<0.0001
Juiciness	3.96	4.04	4.57	0.23	0.164
Chewiness	3.77	3.80	3.79	0.02	0.755
Solubility	4.34	4.31	4.32	0.02	0.512
Chewiness	5.28	5.21	5.23	0.03	0.158

SEM: Standard error of mean, Values in the same raw followed by different superscript letters differ at P<0.05.

Conclusion

Result indicated that, there is a variation in the carcass characteristics, proximate composition, physico-chemical parameters and sensory attributes among the different types of chicken available in the poultry market of Bangladesh. Sensory evaluation result revealed that, broiler meat is more tender as compare to sonali and deshi chicken, whereas indigenous chicken has better overall acceptability relative to that of sonali and broiler chicken. Since there is no large variation in the proximate composition, physico-chemical traits among the chicken types, rather commercial management with balanced nutritional support of sonali and broiler can ensure the meat with higher and possibly good quality protein for the consumers through balanced nutritional support, which can warrant national protein requirement as well as healthy nation for the sustainable development goals. To sum up, nutritional point of view and consumer's ability to buy and consume with cheap price sonali and broiler chicken can be preferred, however, overall taste point of view based on sensory evaluation, deshi chicken can be preferred by the consumers. Based on level of status of people, consumers can choose indigenous or deshi chicken but in general sonali and broiler chicken are also acceptable by the consumers which can be afford by all class of people to meet their protein demand, eventually can secure national human health.

Acknowledgements

This research was conducted with the financial support of Ministry of Science and Technology, The Peoples Republic of Bangladesh. Author expressed gratefulness to all the members of the Livestock and Poultry Farm and Department of Animal Science and Nutrition, BSMRAU, Gazipur, Bangladesh for their kind support during conducting this experiment.

Conflicts of Interest

The authors declare no conflict of interest.

References:

Akter H, Akhter S, Rahman SME, Rahman MM, Hossain MM, Ra CS, Kim JM, Oh DH. 2009. Effect of different preservation methods on physicochemical qualities of beef. Journal of Food Hygiene and Safety, 24 (3): 217-225.

Ali MS, Rahman MM, Habib M, Kabir MH, Hashem MA, Azad MAK, Rahman MM. 2022. Quality of spent hen sausages incorporated with bee honey. Meat Research. 1: Article 13.

Aliani M, Farmer LJ. 2005. Precursors of chicken flavor. Determination of some flavor precursors in chicken muscle. Food Chemistry, 53, 6067–6072.

An JY, Zheng JX, Li JY, Zeng D, Qu LJ, Xu GY, Yang N. 2010. Effect of myofiber characteristics and thickness of perimysium and endomysium on meat tenderness of chickens. Poultry Science, 89(8), 1750-1754.

Association of Official Analytical Chemists. 1999. Official Methods of Analysis. AOAC, Washington, DC.

Bhuiyan AKFH, Bhuiyan MSA, Deb GK. 2005. Indigenous chicken genetic resources in Bangladesh: Current status and future outlook. AnGR Information (AGRI), FAO, Italy, 36: 73-84.

Bithi MAA, Hossain MA, Rahman SME, Rahman MM, Hashem MA. 2020. Sensory, nutritive, antioxidant and antimicrobial activity of Telakucha (*Coccnia cordifolia*) leaves extract in broiler meatball. Journal of Meat Science and Technology, 8: 23-31.

BLRI. 1999. Research Achievement sand Activities Report 1999. Bangladesh Livestock Research Institute, Savar, Dhaka, Bangladesh. pp. 35.

Calkin CR, Hodgen JM. 2007. A fresh look at meat flavour. Meat Science, 77: 63–80.

Castellini C, Dal Bosco A, Mugnai C, Pedrazzoli M. 2006. Comparison of two chicken genotypes organically reared: oxidative stability and other qualitative traits of the meat. Italian Journal of Animal Science, 5(1): 29-42.

Castellini C, Mugnai C, Dal Bosco A. 2002. Meat quality of three chicken genotypes reared according to the organic system. Italian Journal Food Science, 14 (4): 411-412.

Chen JL, Zhao GP, Zheng MQ, Wen J, Yang N. 2008. Estimation of genetic parameters for contents of intramuscular fat and inosine-5′-monophosphate and carcass traits in Chinese Beijing-You chickens. Poultry Science, 87: 1098–1104.

Das SC, Ahammed M, Chowdhury SD, Ali MA. 2014. Eggs for me, Eggs for you, Eggs for all. Keynote paper presented in the Seminar on "World's Egg Day 2014" held in 18October, 2014 at BAU, Mymensingh, Bangladesh. Jointly organized by the Department of Poultry Science, Bangladesh Agricultural University, Mymensingh, and WPSA –Bangladesh Branch.

Disha MNA, Hossain MA, Kamal MT, Rahman MM, Hashem MA. 2020. Effect of different level of lemon extract on quality and shelf life of chicken meatballs during frozen storage. SAARK Journal of Agriculture, 18 (2): 139-156.

Dyubele NL, Muchenje V, Nkukwana TT, Chimonyo M. 2010. Consumer sensory characteristics of broiler and indigenous chicken meat: A South African example. Food Quality Preference, 21: 815–819.

Enfält AC, Lundström K, Hansson I, Lundeheim N, Nyström PE. 1997. Effects of outdoor rearing and sire breed (Duroc or Yorkshire) on carcass composition and sensory and technological meat quality. Meat science, 45 (1), pp.1-15.

Ezhilvalavan S, Senthilkumar, Natarajan RP, Omprakash A, Babu A. 2016. Comparison of Nutrient Composition and Sensory Quality of Meat ofIndian Desi-chicken andCommercial Broilers.World's Poultry Congress, pp 546.

Fanatico AC, Pillai PB, Emmert JL, Owens CM. 2007. Meat quality of slow-and fast-growing chicken genotypes fed low-nutrient or standard diets and raised indoors or with outdoor access. Poultry Science, 86: 2245–2255.

Farmer LJ, Perry GC, Lewis PD, Nute GR, Piggott JR, Patterson RLS. 1997. Responses of two genotypes of chicken to the diets and stocking densities of conventional UK and Label Rouge production systems—II. Sensory attributes. Meat Science, 47(1-2), 77-93.

Fletcher DL. 2002. Poultry meat quality. World's Poultry Science Journal. Jun; 58(2):131-145.

Guan RF, Lyu F, Chen XQ, Ma JQ, Jiang H, Xiao CG. 2013. Meat quality traits of four Chinese indigenous chicken breeds and one commercial broiler stock. Journal of Zhejiang University Science B, 14(10), 896-902.

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, Vol 01, Issue 01, Article No. 4.

Jakubowska M, Gardzielewska J, Kortz J. 2004. Formation of physicochemical properties of broiler chicken breast muscles depending on pH value measured 15 minutes after slaughter. Acta Scientiarum Polonorum Technologia Alimentaria, 3(1), 139-144.

Jorge Soriano-Santos. 2010. Chemical composition and nutritional content of raw poultry meat. Handbook of poultry science and technology, 1,467-491.

Khawaja T, Khan SH, Mukhtar N, Parveen A, Ahmed T. 2013. Comparative study of growth performance, meat quality and haematological parameters of three-way crossbred chickens with reciprocal F1 crossbred chickens in a subtropical environment. Journal of Applied Animal Research, 41(3): 300-308.

Meluzzi A, Sirri F, Castellini C, Roncarati A, Melotti P,Franchini A. 2009. Influence of genotype and feeding on chemical composition of organic chicken meat. Italian Journal of Animal Science, 8: 766–768.

Mengesha M. 2012. Indigenous Chicken Production and the Innate Characteristics. Asian Journal of Poultry Science, 6 (2): 56-64.

Miguel JA, Escoda L, Cubilo MD, Tor M, Asenjo B, Ciria J, Francesch A. 2011. Meat characteristics of chickens from an F1 cross of two improved Spanish breeds depending on slaughter age. Spanish Journal of Agricultural Research, 9 (2): 423-432.
Miller RK. 2002. Meat Processing Improving Quality A volume in Wood head PublishingSeriesin Food Science,Technology and Nutrition Book, 452-464.
Mir NA, Rafiq A, Kumar F, Singh V, Shukla V. 2017. Determinants of broiler chicken meat quality and factors affecting them: a review. Journal of food science and technology, 54 (10): 2997-3009.
Norris D, Ng Ambi JW, Benyi, Makgahlela ML, Shemilis HA, Nesamvuni K. 2007. Analysis of growth curves of indigenous male Venda and Naked Neck chickens. South African Journal of Animal Science, 37 (1): 21-26.
Okada IY, Maeda K, Ota T, Namikawa T, Amano Y, Kurosawa MA, Hasnath MO, Faruque, Majid MA, Karim MDR. 1987. Genetic studies on native chickens in Bangladesh. In: Genetic studies on breed difference action of the native domestic animals in Bangladesh Part. 2. Hiroshima University, 11-26.
Ouhayoun J, Dalle Zotte A. 1993. Muscular energy metabolism and related traits in rabbit. A review. World Rabbit Science, 1: 97.
Ouhayoun J. 1998. Influence of the diet on rabbit meat quality. In "The Nutrition of the Rabbit" De Blas, C, Wisemann, J. (Eds), CABI Publishing, Oxon.
Richardson RI, Mead GC. 1999. Poultry Meat Science. Poultry Science Symp Series, vol. 25. CABI Publishing, NY, USA.
Rizzi C, Chiericato GM, Baruchello M . 2002. Prestazioni produttive di galline ovaiole appartenenti a due ibridi commerciali ea due razze autoctone allevate con metodo biologico. Rivista di Avicoltura, 71 (6): 39-41.
Rizzi C, Marangon A, Chiericato GM. 2007. Effect of genotype on slaughtering performance and meat physical and sensory characteristics of organic laying hens. Poultry Science, 86 (1): 128-135.
Sarker MIA, Hashem MA, Azad MAK, Ali MS, Rahman MM. 2021. Food grade vinegar acts as an effective tool for short-term meat preservation. Meat Research, Vol 01, Issue 01, Article No. 5.
Statistical Analysis Systems, SAS (2013) The SAS System for Windows, Release 9.4. Statistical Analysis Systems Institute, Cary, NC, 556 p.
Swatson HK, Nsahlai IV, Byebwa BK. 2001. The status of smallholder poultry production in the Alfred District of KZN (South Africa): Priorities for intervention. Proceedings of the Institutions for Tropical Veterinary Medicine, 10th International Conference on Livestock, Community and Environment, 20-23rdAugust 2001, Copenhagen, Denmark.
Tang H, Gong YZ, Wu CX, Jiang J, Wang Y Li K. 2009. Variation of meat quality traits among five genotypes of chicken. Poultry science, 88 (10): 2212-2218.
Uddin MN, Hossain MN, Toma SA, Islam O, Khatun S, Begum M, Ahmad SU, Brighton EM. 2021. Physicochemical properties and sensory evaluation of naked neck and non-descriptive deshi chicken meat. The Saudi Journal of Life Sciences, 6(7): 151-158.
Van der Wal PG, Mateman G, De Vries AW, Vonder GMA, Smulders FJM, Geesink GH Engel B. 1993. 'Scharrel' (free range) pigs: carcass composition, meat quality and taste-panel studies. Meat science, 34(1): pp. 27-37.
Wang G, Zheng JX, Hou ZC, Qu LJ, Yang N, Xu GY. 2009. Comparison study on meat quality of AA broilers and Beijing fatty chickens. China Poultry, 31: 11–18.
Wang XQ, Dai FW, Zhang CM, Tan HZ, Zou SG, Feng DY. 2006. Comparison of partial meat quality indices of AA and Lingnanhuang yellow-feathered broiler chicken. Journal of South China Agricultural University, 27: 76–80.
Wattanachant S, Benjakul S, Ledward DA. 2004. Composition, Color, and Texture of Thai Indigenous and Broiler Chicken Muscles. PoultryScience, 83: 123–128.
Yousif IA, Binda BD, Elamin KM, Malik HEE, Babiker MS. 2014. Evaluation of carcass characteristics and meat quality of indigenous fowl ecotypes and exotic broiler strains raised under hot climate. Global Journal of Animal Scientific Research, 2: 365–37.
Zhang H, Zhang J, Gong DQ. 2004. Study on carcass characteristics of Liyang chicken. China Poultry, 26: 31–32.
Zhao JP, Chen JL, Zhao GP, Zheng MQ, Jiang RR, Wen J. 2009 Live performance, carcass composition, and blood metabolite responses to dietary nutrient density in two distinct broiler breeds of male chickens. Poultry Science, 88: 2575–2584.