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Research Note

Quality of Soup Prepared from the Broiler Head and Shank

K. Sudheer, P.K. Mandal*, U.K. Pal, H.T. Santosh Kumar, C.D. Das and V. Kesava Rao

Department of Livestock Products Technology, Rajiv Gandhi College of Veterinary and Animal Sciences Kurumbapet, Pondicherry 605 009

ABSTRACT

About 300 millions of broiler chickens are annually slaughtered in India of which head and shank contribute 2.5 and 4.0%, respectively, of live weight as waste. Proper utilization of them will open avenue for their economic disposal. Therefore, this study was planned to prepare chicken soup by using head and shank and to assess their comparative quality. A recipe for chicken soup was standardized containing head or shank, oil, wet condiments, salt, dry spices and azenomoto at 25, 2, 2, 1.25, 0.3 and 0.1 %, respectively. The soup was prepared in a pressure cooker by frying condiments and chicken pieces in oil then other ingredients and water was added and cooked for 30 min at 15lb pressure. The physico-chemical and sensory quality of two soups were assessed. The protein, fat and total solid contents were 1.41 & 2.24; 2.25 & 4.71 and 5.62 & 6.77%, respectively, in soup with head and shank. Fat content was significantly ($p<0.05$) higher in soup with shank. Organoleptically chicken soup with head received significantly ($p<0.05$) higher scores for flavor and overall acceptability. However, both the soups had good acceptability and found to be comparable. Preparation of soup from the head and shank of broilers can open the new avenue for their economic utilization and thereby increase the profitability of broiler farming.

Key words: *Chicken soup, broiler, head, shrank, quality.*

About 300 millions of broiler chickens are annually produced in India, which are slaughtered for meat purpose (Poultry Year Book 2008-09). Head and shank contribute about 2.5% and 4.0%, respectively of the live weight of broilers (Lopez, 2007). Utilization of chicken heads and shanks in the preparation of beverage item such as soup would improve the profitability of broiler industry and would provide a palatable and nutritious beverage to the consumers at affordable price. Moreover, it will open the new avenue for economic utilization of heads and shanks and thereby can increase the return for industry and reduce the burden of disposal and environmental pollution.

Lachhiramani (1979) prepared soup by using chicken shanks with acceptable taste and flavour. Chidannandiah and Sanyal (2001) reported preparation of chicken soup using spent hen head with good sensory quality and nutritional value. Chidannandiah and Sanyal (2006) reported the use of spent hen shanks in the preparation of soups along with whey with good sensory quality and nutritional value. However, there are paucity of information about the utilization of broiler heads and shanks in preparation of soups. Therefore, this work was undertaken to standardize the preparation of chicken soup using broiler head and shank separately and to compare the differences in their quality, if any.

Broilers of about 6 to 7 weeks of age were obtained from the broiler farm of Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry and slaughtered by halal method in the semi-automatic poultry-processing unit of the Department of Livestock Products Technology. Heads and shanks were collected and thoroughly cleaned. Eyes, beaks and hairs including skin were removed from head and chopped into small pieces. Shanks were descaled by scalding and claws were removed and chopped manually into small pieces (approx 2 cm length). Proximate analysis of raw head and shank was done as per AOAC (1996).

The recipe for chicken soup was standardized through preliminary trials. The composition of standardized recipe is presented in Table-1. The spice mix consisted of (in percent) finely ground red chilly-20,

*Corresponding author: e-mail: mandalpkm@gmail.com

Table 1: Standardized recipe for chicken soup

Ingredients	Composition
Water	1000ml
Chicken	25%
Dry spices	0.3%
Wet condiments	2%
Salt	1.25%
Azenomoto	0.1%
Oil	2%

a, b : Means bearing different superscripts differed significantly (P<0.05)

black pepper-15, coriander-15, cumin-15, aniseed-10, turmeric-10, clove-5, cinnamon-5, cardamom-5 and the condiments containing onion, ginger and garlic paste in the ratio of 4:2:1.

All the ingredients were weighed as per the recipe. The soup was prepared by pouring the oil in a clean pressure cooker and followed by addition of green condiments and chicken pieces (head/shank) and fried for sometime over flame. Then dry spices, salt, azenomoto were added, followed by required amount of water and the lid of the cooker was closed (Figure-1). After the first whistle, it was allowed to cook for 30 minutes. After cooking, the soup was cooled to room temperature and later filtered using muslin cloth. From the soup prepared some portion was kept for analysis and the remaining portion was taken for sensory evaluation. The soup prepared from head and shanks were analyzed for total solids, protein, fat (AOAC, 1996) and standard plate count (APHA, 1996). All the analysis were carried out in duplicate. Sensory evaluation of the product was carried out with the help of six semi-trained judges for color, flavour, consistency, chicken flavour intensity and overall acceptability using a 8-point descriptive scale (Keeton, 1983) where 1-denotes extremely poor and 8-denotes excellent. Three trials were conducted and data obtained were analyzed statistically using students t-test (Snedecor and Cochran, 1995) to see the effect of raw materials on quality of chicken soup.

Broiler head and shank contained 70 and 66% moisture, 15.78 and 17.52% protein, 12.07 and 10.94% fat and 4.92 and 5.12% ash, respectively.

Fig.1: Flow chart of chicken soup preparation

Chicken head and shank
↓
Thoroughly cleaned
↓
Eyes, beak, hair removed from head;
Shanks descaled and claws removed
↓
Head and shanks cut into pieces
↓
Oil taken in cooker
↓
Pour the pieces and condiments
↓
Fried for sometime
↓
Add spices, salt and azenomoto
↓
Add water
↓
Pressure-cooked for 30 minutes (15 psi)
↓
Filtered through clean, fine muslin cloth
↓
Chicken soup

The results of physico-chemical analysis and sensory evaluation are presented in Table-2. Soup prepared using shank had significantly higher (P<0.05) fat content compared to chicken head soup, which might be due to leaching of fat from bone marrow of the shank during cooking. Protein and total solids contents of chicken soup with shank were little higher than those of chicken soup with head but the differences were non-significant.

Organoleptically chicken soup with head received significantly higher (P<0.05) flavour scores from the panelists and consequently had significantly higher (P<0.05) overall acceptability scores. Better flavour scores for chicken soup with head might have been contributed by higher amount of phospholipids in the brain tissues which might have been released in the soup during prolonged cooking as cooking with water under pressure causes development of pronounced and unique flavour changes in deep tissues of meat (Hedrick *et al*., 1994). On the whole,

Table 2: Quality of soup prepared from broiler head and shank

Parameter	Head	Shank
Protein (%)	1.41 ± 0.04	2.24 ± 0.12
Fat (%)	2.25 ± 0.07 [a]	4.71 ± 0.17 [b]
Total solids (%)	5.62 ± 0.26	6.77 ± 0.18
SPC (log CFU/ml)	3.58 ± 0.02	3.53 ± 0.01
Organoleptic quality		
Colour	6.79 ± 0.17	6.33 ± 0.17
Flavour	7.04 ± 0.16 [b]	6.20 ± 0.17 [a]
Consistency	6.62 ± 0.13	6.62 ± 0.16
Chicken flavour intensity	6.79 ± 0.20	6.37 ± 0.20
Overall acceptability	7.08 ± 0.16 [b]	6.29 ± 0.19 [a]

both the soups had good overall acceptability. The quality of soups prepared from broiler head and shank were found to be comparable to the soups prepared from spent hen head and shank by Chidanandaiah and Sanyal (2001, 2006) both in physico-chemical properties as well as the organoleptic quality.

It can be concluded from the findings of this study that both head and shanks from broilers can be utilized for the preparation of high quality nutritious soup. Preparation of soup can open the new avenue for economic utilization of heads and shanks and thereby increase the profitability of broiler farming.

REFERENCES

AOAC (1995) Official Methods of Analysis 16th edn. (Ed) Horwitz W Association of Official Analytical Chemists, Washington DC

APHA (1996) Compendium of Methods for Microbiological Examination of Foods, Marvin Speck (ed), American Public Health Associations, Washington DC

Chidanandaiah and Sanyal M K (2001) Quality of soup prepared froms pent hen heads and whey. Indian. J. Poult Sci. 36:240-42

Chidanandaiah and Sanyal M K (2006) Quality of whey and water based soup prepared from spent hen shank. Indian. J. Poult. Sci. 41(1):102-104

Hedrick HB, Aberle ED, Forrest JC, Judge MD and Merkel RA (1994) Principles of Meat Science. Third Edition, Kendall Hunt Publishing Co., USA.

Keeton JT (1983) Effect of fat, NaCl, and phosphate levels on the chemical and sensory properties of pork patties. J. Food Sci., 48: 478-481.

Lachhiramani RS (1979) Utilization of chicken shanks in chicken soup. Poultry Guide 16:23-25

Lopez E.C (2007) Getting the best from Giblets. Poultry International July 2007:16-20

Snedecor GW and Cochran WG (1967) Statistical Method. 6th edn. Oxford and IBH Publishing Co., New Delhi.