



EVALUATION THE SOME BIOCHEMICAL QUALITY AND BACTERIAL LOAD OF THE LOCAL AND IMPORTED CHICKEN MEAT

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ABSTRACT

The targets of the present study were will assess the some biochemical traits and biological quality of the local and imported chicken meat. Four types of chicken meat with ten replicates (two of local origin (A and B) and two of imported once (C and D) were gathered randomly from different districts of Baghdad area. Constantly on tests were tried to biochemical personal satisfaction Also bacterial load. Information uncovered that most elevated in the intend values of defrosting passing to imported chicken meat were over 8.6%, 8.3% done contrast with local chicken meat 4.26%, 4.30%, Also were a critical ($p < 0.05$) higher cholesterol focus might have been watched in breast. Also thigh meat of imported in comparison to local sample chicken meat. The cholesterol substance to thigh meat might have been relatively higher over clinched alongside breast part for both the local and imported chicken meat. The effects about bacteriological personal satisfaction were the mean values from claiming downright bacterial tallies and aggregate coliform tallies done imported tests were higher over those standard cutoff points ICOSQC were over 5.71log cfu/g, 5.41log cfu/g to downright vigorous bacterial check Furthermore 2.23 log cfu/g, 2.46 log cfu/g for aggregate coliform in examination of the mean values about downright bacterial checks What's more downright coliform checks in the local chicken meat specimens were 4.98 log cfu/g, 5.00 log cfu/g to downright bacterial checks Also 1.76 log cfu/g, 1.77 log cfu/g for coliform checks.

KEYWORDS: - biochemical quality, bacterial load, chicken meat.

INTRODUCTION

The incessant utilization for red meat need been connected with expanded dangers of coronary heart maladies (CHD) and colon Furthermore different tumors (Larsson Furthermore Nicola, 2014). On the contrary, utilization from claiming white meat is not connected with An high hazard of CHD What's more it Additionally diminishes those possibilities from claiming colorectal cancellous (Tantamango *et al.*, 2011). Exceptional taste and secondary dietary quality for neighborhood chicken in examination with the individuals from claiming foreign chicken bring not unmistakably assessed through experimental analyses, What's more it will be vital on explain those physicochemical Components that impact those taste Also dietary worth from claiming these chickens (Jayasena *et al.*, 2013). Poultry meat will be nutritious, prudent and simple on get ready. It may be low over calories, a great hotspot from claiming vital unsaturated fat acids Furthermore key aminic acids (Bell Furthermore Weaver, 2002). It is challenging on analyze cholesterol content for poultry meat to that for meat and pork meat a direct result poultry results at times hold numerous skin, which is secondary Previously, cholesterol content roughly 80 on more than 100 mg/100 g, likewise crude poultry meat need roughly 27 should 90 mg cholesterol/100 g Furthermore cooked poultry meat holds around 59 should 154 mg/100g (Bragagnolo, 2009). Poultry meat needs lesquerella cholesterol content tantamount to that for meat and pork meat (Horbariczuk also how 1998; Paleari also how 1998; Piironen also how

2002; tenet also how 2002; Hur also how 2007; Bragagnolo, 2009. Zhang *et al.*, (2010) What's more Mikulski *et al.*, (2011) investigated those impact for hereditary qualities from claiming chickens (slow- Furthermore quick growing) once Growth performance, meat personal satisfaction. Those ph quality need been connected with various other meat nature qualities including tenderness, WHC, defrosting loss%, cooking loss, juiciness, and time span of usability (Allen *et al.*, 1998; Hassan, 2011). Also, the defrosting reduction to poultry didn't surpass 5% Also short of what 5% rate for great review (ICOSQC, 1988). Vigorous plate check is a usually recommended as a microbiological system to estimating the sustenance time span of usability. The microbial tainting might render those chicken meats perilous with shopper alternately disable its caliber. Coliforms are ordinarily predominant in the fecal matters what's more utilized similarly as indicators to possibility fecal tainting about sustenances. E. Coli Might be utilized as indicators for those sullying about oven meat Eventually Tom's perusing pathogens (ICMSF, 1986; Aberle *et al.*, 2001). Those standard cutoff points recorded Toward ICOSQC didn't surpass the extend between (10-4 -10-5) to downright bacterial number Furthermore (50-10-1) to downright coliform check (ICOSQC). The aggregate bacterial check Also coliform to our ponder are comparative of the effects for other investigations were ranges between (10-5 – 10-6) for TPC What's more (10 -2) for coliform (TCC) (Abed alrahman, 2008; Shareef *et al.*, 2014). The destination of this investigate might have been

will focus those sway on assess exactly biochemical personal satisfaction Furthermore bacterial load of the neighborhood Furthermore foreign chicken meat .

MATERIALS & METHODS

Samples collection

Four types of chicken meat with ten replicates; two types of local origin (A and B) and two types of imported once (C and D) were collected randomly from various regions of Baghdad province. All samples conserved cooled in an ice box during the transfer to the laboratory in the department of public health, veterinary medicine college, University of Baghdad. Chicken meat samples stored in a refrigerator (4 °C) until the analysis in the laboratory.

Samples preparation

Ten grams of meat were extracted aseptically and added to 90ml of (0.1%)(wt/v) buffered peptone water and homogenized for 5 minutes in a stomacher then incubated aerobically at 37oC for 24 hrs.

Enumeration total viable count (TPC)/ Aerobic plate count (APC):

For evaluating total viable counts of microorganisms, standard pour plate technique is used. 1ml of cultured broth was serially diluted in 0.1%(wt/v) buffered peptone water, Take 0.1ml of 10-4, 10-5 and 10-6 dilutions in (duplicate) of inoculum in the petri plates to which nutrient agar having temperature around 45 -50oC and mix thoroughly by rotating plate clockwise and anticlockwise for five times. Allow the plates to solidify and then keep the plates for incubation at 37oC for 24-48 hrs. Colonies after incubation period were counted. The following formula used for calculating the colony forming units (CFU)/gr meat:

Total Count of bacteria (CFU)/gr meat= mean colony culture × dilute factor⁻¹.

Total coliform count similar to total bacterial count but different that plating method using a sterile violet red bile agar (VRBA).

Total Count of coliform (CFU)/gr meat= mean colony culture × dilute factor⁻¹.

Chemicals and physical tests

Value of pH

Samples of chickens meat (5 g) were homogenized in 45 mL of distilled water using a grinder (SFM1500NM, Shinil Co. China) for 1 min. Sample solutions were centrifuged for 15 min at 2,000 g, and the pH was measured using a pH meter ,marked Hunna, Malesia. (Jouki, and Khazaei, N., 2011)

Thawing loss (%)-

Thaw loss was described by (Nam; 2000) determined by weighing each whole muscle prior to freezing and again after thawing and blotting dry with tissue paper. Thaw loss was expressed as a percentage of initial weight prior to freezing. The following formula used for calculating the thaw loss:

$$\text{Thaw loss (\%)} = \frac{[(\text{sample weight before thawing (g)} - \text{sample weight after thawing (g)}) / \text{sample weight before thawing (g)}] \times 100$$

Measurement of cholesterol

Spectrophotometric analysis described by (Franey; 1968).

1.Preparation of colorings reagent:

The stock reagent was prepared by dissolving 10g of FeCl3.6H2O in glacial acetic acid using a 100mL volumetric flask. Prior to use, the 1.0mL of the stock reagent was transferred into a 100mL flask and concentrated H2SO4 was added to volume.

2.Color Reaction:

The dried extracts from (a), (b) and (c) were re suspended in 3mL glacial acetic acid, 2mL of FeCl3 coloring solution was added and the resultant color was read at 565nm (Pie Unicom UV1 Double Beam Scanning Spectrophotometer). The absorption was compared against an external cholesterol standard and the cholesterol content was calculated using the following equation:

$$\text{Cholesterol (mg/100gram)} = \frac{C \times 20 \times DF \times W}{4 \times 100}$$

Where:

C = Concentration of cholesterol (from standard curve); DF = dilution factor; W = weight of sample x c m).

Statistically of analysis

The data were analyzed by using SAS program (21) the design used was completely randomized design (CRD). The significance of differences between groups was verified by the Duncan multiple range test.

RESULTS & DISCUSSION

Table (1) shown the mean of pH meat in the chicken samples were significant differences (p<0.05) between the means were ranges (5.93 - 6.40). The means values of pH in imported chicken’s meat were higher (6.4, 6.23) than local chicken meat (5.93, 5.98).The pH values in this study were similar to other researches were ranges (5.9- 6.4) because the freezing was rising the values (Zhang *et al.*, 2010: Mikulski *et. al.*, 2011).

TABLE 1: The pH values of local and imported chicken meat samples

Origin of sample	Chicken meat samples	No. of samples	Means ±SE
Local	(A)	10	5.93 ± 0.03 d
	(B)	10	5.98 ± 0.04 c
imported	(C)	10	6.40 ± 0.13 a
	(D)	10	6.23 ± 0.06 b

Different small letter vertically refer to significant differences at level (P<0.05) among mean of samples.
SE: Standard Error

Table (2) shown, the means of cholesterol concentrations in chicken meat samples from breast and thigh in carcasses were significant difference ($p < 0.05$) between the means. The range between (58.8 – 82.0) mg/ 100g from the breast area and (80.6 – 112.33) mg /100g from the thigh area. The means of cholesterol concentrations were high in

imported chicken meat samples than local chicken meat samples; especially the means values of thigh. The results data were similar to other research study (Horbariczuk and others 1998; Paleari and others 1998; Piironen and others 2002; Rule and others 2002; Hur and others 2007; Bragagnolo, 2009).

TABLE 2: The means of cholesterol concentration from the breast and thigh in local and imported chicken meat (mg /100g) \pm SE.

Origin of sample	Chicken meat samples	No. of samples	Cholesterol in Breast	Cholesterol in Thigh
Local	(A)	10	58.8 \pm 0.8 b	80.6 \pm 0.9 b
	(B)	10	61.33 \pm 1.03 b	81.6 \pm 0.8 b
imported	(C)	10	80.16 \pm 1.1 a	103 \pm 0.9 a
	(D)	10	82.0 \pm 0.9 a	112.33 \pm 0.8 a

Different small letter vertically refer to significant differences at level ($P < 0.05$) among mean of samples.
SE: Standard Error

The Table (3) shown the means of thawing percentage % lose from the chickens meat samples, there were a significant difference ($p < 0.05$) between the means. The means of thawing lose were higher in imported samples with the range between (8.6 – 8.3) %. Than the means of local samples were (4.26 – 4.30) % this variation in thawing lose values may be explained by the difference in storage conditions of samples (Hassan, 2011). The mean values of logarithmic total aerobic bacterial counts and total coliform in frozen chicken meat samples (local and

imported) shown in Table (4). The mean values of total aerobic bacterial counts were ranged from 4.98 to 5.7 log cfu/g meat. Data revealed that there was non-significant differences ($P > 0.05$) in the average bacterial counts between the local samples but the mean values of total aerobic bacterial counts in imported samples were higher than the standard limits ICOSQC. Data revealed that similar to the results obtained by the other researchers ((ICMSF, 1986; Aberle *et al.*, 2001; Abed alrahman 2008; Shareef *et al.* , 2014).

TABLE 3: The thawing lose % in chickens meat samples

Origin of sample	Chicken meat samples	No. of samples	Means \pm SE
Local	(A)	10	4.26 \pm 0.23 b
	(B)	10	4.30 \pm 0.22 b
imported	(C)	10	8.6 \pm 0.21 a
	(D)	10	8.3 \pm 0.22 a

Different small letter vertically refer to significant differences at level ($P < 0.05$) among mean of samples.
SE: Standard Error

Table (4) shown to the mean values of total coliform bacterial counts were ranged from 1.76 to 2.46 log cfu/g meat. Data revealed that there was non-significant differences ($P > 0.05$) in the average bacterial counts between the local samples but the mean values of total

coliform bacterial counts in imported samples were higher than the standard limits ICOSQC. Data revealed that similar to the results obtained by the other researchers (Abed alrahman 2008; Shareef *et al.* 2014).

TABLE 4: The means of total bacterial count with total coliform in local and imported Chicken meat samples

Origin of sample	Chicken meat samples	No. of samples	Means of total bacterial count cfu/ g. \pm SE	Means of total coliform cfu/g \pm SE
Local	(A)	10	9.7 \times 10 ⁴ \pm 0.27 c	5.8 \times 10 ¹ \pm 0.03 c
	(B)	10	1 \times 10 ⁵ \pm 0.27 c	6.0 \times 10 ¹ \pm 0.02 c
imported	(C)	10	5.1 \times 10 ⁵ \pm 0.38 a	1.7 \times 10 ² \pm 0.05 b
	(D)	10	2.6 \times 10 ⁵ \pm 0.41 b	2.9 \times 10 ² \pm 0.01 a

Different small letter vertically refer to significant differences at level ($P < 0.05$) among mean of samples.
SE: Standard Error

An overall conclusion on the basis of this investigation pointed out that local chicken meat was healthier than imported chicken meat. The mean values of pH of meat, cholesterol concentration, thawing loss %, total bacterial count (TBC) and total coliform (TCC) that mentioned in Table 1, 2, 3 and 4 were similar to the results obtained by the other researchers (Zhang *et al.*, 2010; Mikulski *et al.*, 2011; Horbariczuk *et al.*, 1998; Paleari *et al.*, 1998;

Piironen *et al.*, 2002; Rule *et al.*, 2002; Hur *et al.*, 2007; Bragagnolo., 2009; ICOSQC.,1988 ; Abed alrahman., 2008 ; Shareef *et al.*, 2014).

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