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Comparative Analysis of Amino Acid Profiles in Four Muscle Regions of Local and Ross 308 Broiler Chickens (*Gallus gallus domesticus*).

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ABSTRACT

Poultry meat is very important in the human diet due to the high content of amino acids, which are essential for growth. This study was therefore intended to establish the ratios of amino acids in four muscle parts—pectoralis major, pectoralis minor, femoral, and gastrocnemius (legs)—of both local (*Gallus gallus*) and imported broiler chickens (*Gallus gallus* Ross 308). Three different weights (0.5, 1.0, and 1.5 kg) of chicken were used. The samples were collected from July to September 2024. According to the present results, 16 amino acids were analyzed and provided as essential (8) and non-essential (8) amino acids. The essential amino acids provided were arginine, lysine, threonine, isoleucine, methionine, histidine, leucine, and phenylalanine, and the non-essential were aspartic, serine, alanine, glutamic, tyrosine, glycine, cysteine, and proline. The present results indicated that in both strains at all weights, isoleucine statistically had the lowest percentage of amino acids in the studied muscles. Unlike in isoleucine, arginine, and glutamic acid had the highest percentages statistically in both species. Whereas in the local species, the percentage of this amino acid was higher than that in the imported species. *G. gallus*. Amino acids in poultry play a vital role in the human diet.

1. Introduction

Poultry meat is essential in human nutrition because it is a basic diet-supplied product with high levels of essential amino acids supporting growth [1]. Due to the quality of meat, consumers prefer it as a remedy for respiratory diseases; for example, common colds. It also helps carry out the physiological functions of various body organs, fights against aging by building muscles and bones, strengthens the immune system; and brain function improves [2,3]. Adequate amounts of amino acids are taken up to produce neurotransmitters and hormones, and also for muscle growth and all other cellular processes [4]. Branched-chain amino acids, for example, the 3 tested amino acids, valine, leucine, and isoleucine, are required for skeletal muscle growth and the recovery of muscle function after exercise and the integrity of cell membranes, they are used at 35% by essential amino acids [5,6,7]. Several prior studies have dealt with the estimation of amino acids in the pectoral and thigh muscles of slow-growing indigenous chickens, like [8] apart from studies on fast-growing broilers, including [9,10]. Factors that influence amino acid content in the muscle and, thus,

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indicate amino acid muscle quality of poultry meat include the nature of nutrition and age of the bird at slaughter [11]; genotype [12], and breed [13].

2. Materials and Methods

2.1. Sample collection

Between July and September 2024, 36 samples of Ross 308 chickens, local (18 samples) and imported (18 samples) obtained from various markets in the northern part of Basrah province were brought to the Animal House Laboratory in the Department of Biology, College of Education-Qurna, University of Basrah. From each sample, the pectoralis major, minor, femoral, and gastrocnemius (legs) muscles were aseptically dissected and then stored at -20°C in tightly sealed plastic bottles.

2.2. Amino Acid Extraction

Amino acids were extracted as previously described [14]. A 3 g muscle sample was placed in a 25 ml volumetric flask with 25 ml of 1 M hydrochloric acid at 55°C for 3 hours. The sample was then dried using a rotary evaporator, followed by the addition of 5 ml of sodium citrate (pH 2.2). The sample was filtered using a 0.45 µm plastic filter and then transferred to a High - Speed Amino Acid Analyzer for injection.

2.3. Amino acid derivatization process

This process required taking 1 ml of the sample prepared as mentioned above and mixed with 200 µl of 5% orthophthaleinaldehyde (OPA). The prepared sample was shaken for 2 minutes, and 100 µl of the Shaked sample was injected into the Amino Acid Analyzer. The test was conducted in the laboratories of the Scientific Research Authority / Environment and Water Research Center using an amino acid analyzer. The method provided by [15] was used, where the carrier phase was used, consisting of (methanol: acetonitrile: 5% phosphoric acid) in proportions (20: 60: 20) at a flow rate of 1 ml/minute. A separation column (C18–NH2 (250 mm * 4.6 mm) was used to separate the amino acids, while a fluorescent detector was used to detect amino acids at wavelengths (Ex = 445 nm, Em = 465 nm). The Clarity 2015 program was used to analyze the amino acids.

Statistical analysis

The statistical analyses were performed using IBM SPSS Statistics version 22 software. The data were subjected to either one-way ANOVA, followed by Fisher's LSD multiple comparisons test, or two-way ANOVA, as appropriate. Differences were considered statistically significant for values of $P < 0.05$.

3. Results

Sixteen amino acids were obtained after hydrolysis and extraction of proteins to determine the amino acids in the muscular parts (pectoral major, minor, femoral, and leg muscles) of the corresponding weights (0.5, 0.1, 1.5 kg) of local and exotic chickens. These amino acids are classified as essential (Arginine (Arg), Lysine (Lys), Threonine (Thr), Isoleucine (Ile), Methionine (Met), Histidine (His), Leucine (Leu), Phenylalanine (Phe)) based on the results of the availability of the amino acids and as non-essential amino acids (Aspartic (Asp), Serine (Ser), Alanine (Ala), Glutamic (Glu), Tyrosine (Tyr), Glycine (Gly), Cysteine (Cys), Proline (Pro)).

The present findings indicated variations in the amino acid compositions of the muscle parts mentioned and for the weights considered in the two species investigated. The amino acid compositions in the weight of 0.5 kg for the pectoralis major muscle varied from 2.75% for isoleucine acid to 9.14% for phenylalanine acid (Figure 1). For the imported type, however, amino acids recorded proportions ranged between 3.38% for isoleucine acid and 8.36% for arginine acid (Figure 2). Whereas amino acids in the pectoralis minor muscle in the local type recorded proportions ranged between 2.76% for isoleucine acid to 9.15% for phenylalanine acid (Figure 1).

The percentage composition of the pectoralis minor muscle in the imported type at a weight of 0.5 kg ranged between 3.38% for isoleucine acid and 8.33% for glutamic acid (Figure 2). The lowest percentage recorded was 2.73% for isoleucine acid, and the highest percentage recorded was 9.12% for phenylalanine acid in the local type (Figure 1). For the thigh muscle of the imported type, the lowest percentage composition was of isoleucine acid at 3.39%, and the highest percentage composition was for arginine and glutamic acids at 8.31% (Figure 2). The percentages for gastrocnemius muscles ranged from 2.72% for isoleucine acid to 9.03% for phenylalanine acid in the local type, while that of the imported type was 3.36% for isoleucine acid and 8.31% for arginine acid (Figure 2). The amino acids produced were analyzed in the four muscles for a weight of 0.5 kg. The statistical results showed that there were significant differences, $P<0.05$, between the amino acid ratios in these four muscles of the two species, as shown in Figures 1 and 2.

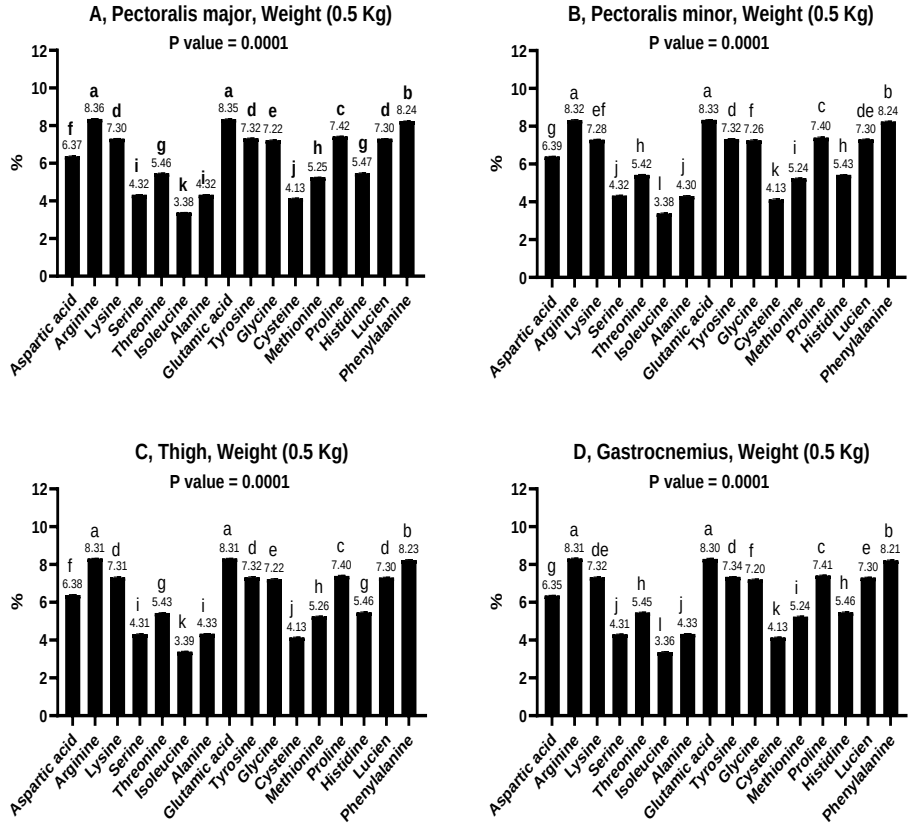

Fig.1. Amino acid ratios (%) in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles for a weight of 0.5 kg in *G. gallus.*

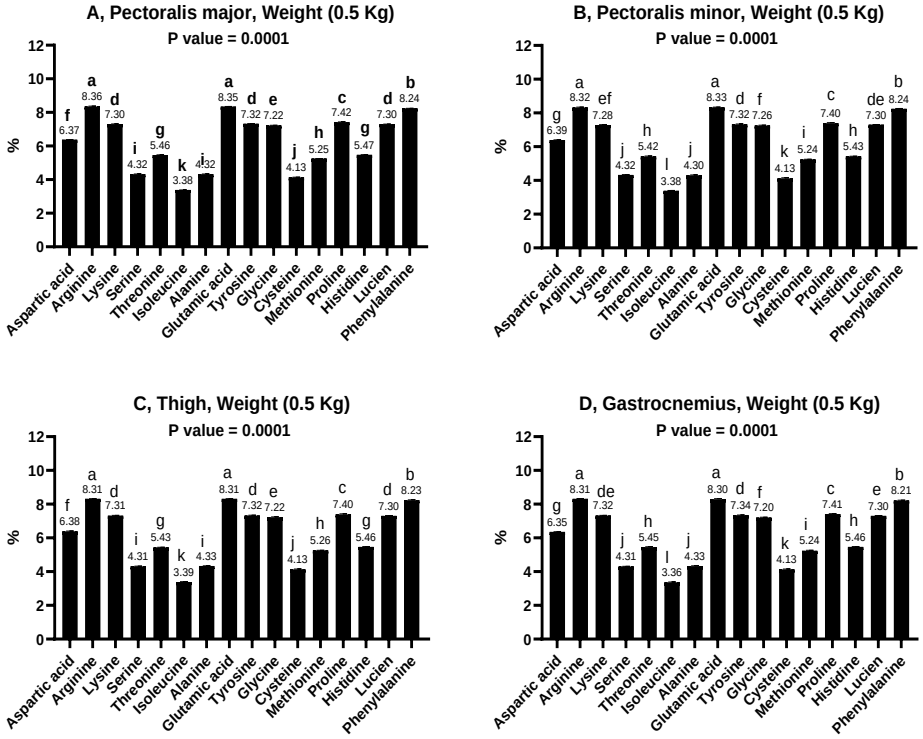

Fig.2. Amino acid ratios (%) in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles for a weight of 0.5 kg in *G. gallus* Ross 308.

The current results on amino acid ratios in four muscles from the two species studied revealed a marked distinction in the amino acid ratios. For a mass of 1 kg in the local species, the percentages of isoleucine were significantly lower, which are 3.36, 3.28, 3.25, and 3.26% in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles, respectively (Figure 3). Whereas the percentages of arginine were significantly higher, which are 8.71, 8.66, 8.68, and 8.50% in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles of the local species, respectively (Figure 3). Upon analysis of the statistical results, a highly significant difference was revealed at $P<0.05$ between the amino acid values of the four muscles and for a mass of 1 kg in the local species, as shown in Figure 3. Similarly, for a mass of 1 kg in the imported species, the percentages of isoleucine were also significantly lower, being 3.31, 3.30, 3.34, and 3.32% for the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles (Figure 4). Whereas the percentages of arginine were significantly higher, which are 8.44, 8.47, 8.44, and 8.48% in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles of the imported species, respectively (Figure 4). The present study indicates that the content of essential amino acids (arginine, lysine, leucine, and phenylalanine) and non-essential amino acids (aspartic, glutamic, tyrosine, glycine, and proline) was significantly higher in the four muscles of the local chicken than those of the imported chicken.

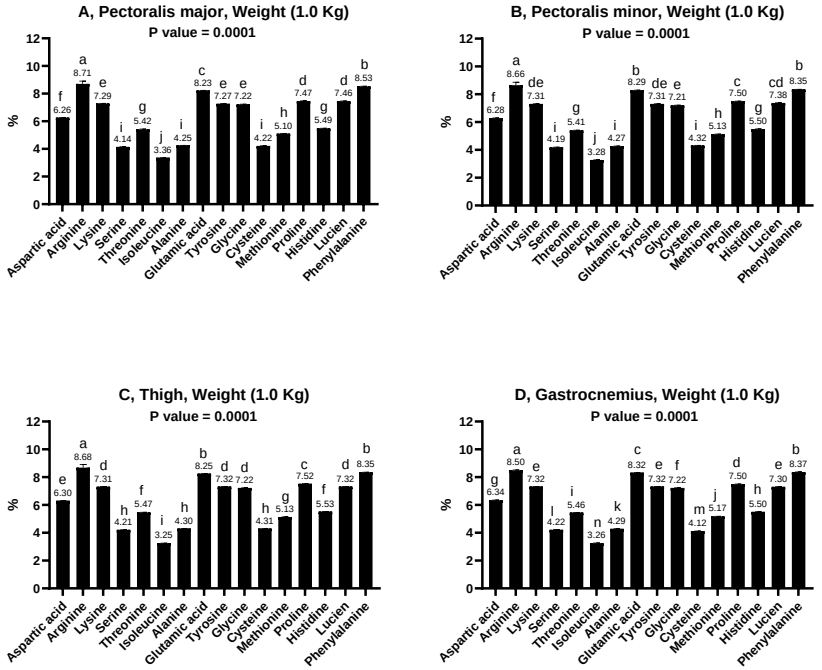

Fig.3. Amino acid ratios (%) in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles for a weight of 1.0 kg in *G. gallus.*

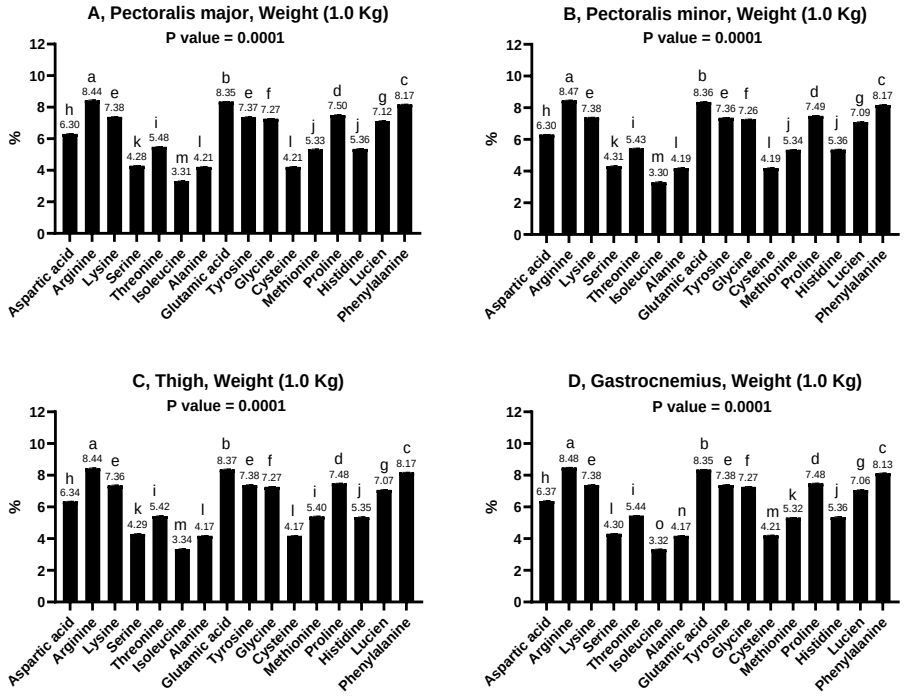

Fig.4. Amino acid ratios (%) in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles for a weight of 1.0 kg in *G. gallus* Ross 308.

The values of the amino acid ratios for the four muscles at a mass of 1.5 kg for both the local and imported types showed a marked dissimilarity. Isoleucine was statistically found to be at the lowest percentages in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles for the local type (3.37, 3.38, 3.39, and 3.38%) and the imported type (3.65, 3.73, 3.66, and 3.62%), respectively (Figures 5, 6). Unlike isoleucine, in the local type, arginine was statistically found to be

at the highest percentages in the pectoralis major (8.40%), pectoralis minor (8.37%), femoral (8.34%), and gastrocnemius (8.32%) muscles (Figure 5). Glutamic acid statistically had the highest percentage in the gastrocnemius muscle, reaching 8.33% in the local type (Figure 5). Whereas in the imported type, glutamic acid significantly had the highest percentages in the pectoralis major (8.28%), minor (8.5%), femoral (8.26%), and gastrocnemius (8.25%) muscles (Figure 6). The current results also showed that arginine had higher percentages in the pectoralis major and minor, femoral, and gastrocnemius muscles at a weight of 1.5 kg for the local species. At a mass of 1.5 kg, glutamic acid had only the highest percentage in the gastrocnemius muscle for the local species, while it had the highest percentages in the four studied muscles for the imported chickens. This indicates that both arginine and glutamic acid have a higher percentage in the femoral and gastrocnemius muscles for a weight of 1.5 kg for the imported chicken.

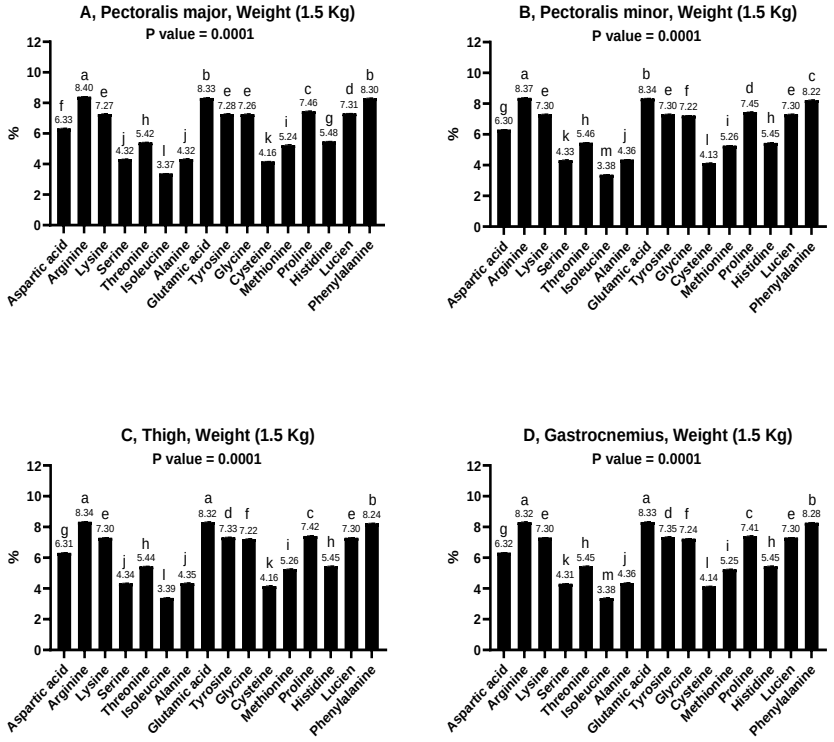

Fig.5. Amino acid ratios (%) in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles for a weight of 1.5 kg in *G. gallus*.

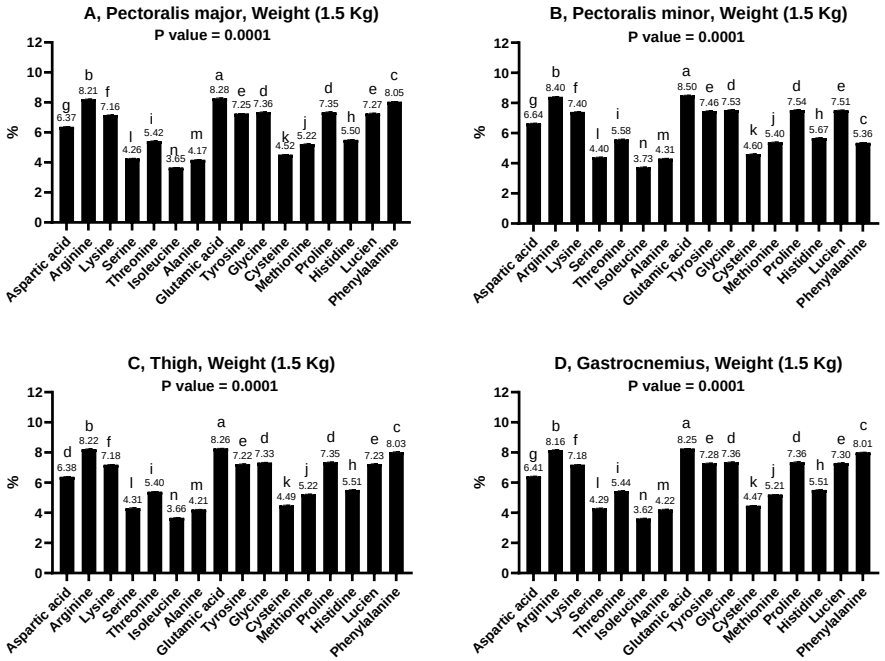

Fig.6. Amino acid ratios (%) in the pectoralis major, pectoralis minor, femoral, and gastrocnemius muscles for a weight of 1.5 kg in *G. gallus* Ross 308.

4. Discussion

Amino acids play a physiological role in regulating many vital processes within the body and are essential substrates for the synthesis of several low molecular weight bioactive compounds of physiological importance, such as glutathione, serotonin, and thyroid hormones. These additional functions are attributed to the diversity in the composition of amino acids that make up proteins in the body [29,30,35]. Amino acids are considered the building blocks in the formation of proteins, which play an important role in shaping body tissues, building structures (such as collagen), and maintaining sophisticated control systems responsible for oxygen transport capacity, nuclear functions, enzymatic mechanisms, signaling pathways, and defense against pathogens[31,33]. Amino acids functionally regulate muscle growth and metabolism and have health effects on humans, such as reducing cardiovascular diseases and obesity[20]. The quality of dietary protein is assessed based on the ratio of essential to non-essential amino acids, as this ratio reflects the efficiency of the protein in meeting the physiological needs of the organism[34]. In recent years, there has been a noticeable increase in studies aimed at developing the concept of functional amino acids, such as glutamine and arginine, which are defined as amino acids involved in regulating essential metabolic pathways that enhance overall health and support growth, development, and reproduction in living organisms. A deficiency in any of these amino acids, whether essential or non-essential, leads to a disorder that not only results in impaired protein synthesis but also negatively affects the overall physiological balance of the body[20]. Many studies have reported the quantities, types, concentrations, and ratios of amino acids in the muscles of local and commercial poultry [10,13]. The commercial chicken breed Ross 308 recorded 16 amino acids [10]. The study on four different breeds of chicken, including the commercial broiler breed, two breeds of native Thai chicken, and male laying hens, also recorded 16 amino acids[13]. The current study aligns with the aforementioned studies in terms of the number of recorded amino acids. The local chicken in the current study showed higher percentages of essential amino acids (arginine, lysine, leucine, and phenylalanine) and non-essential amino acids (aspartic, glutamic, tyrosine, glycine, and proline) in the four studied muscles compared to imported chicken. The current results are consistent with studies [8] and [21], reflecting the superior flavor of local chicken over commercial broilers. It was noted that valine, isoleucine, leucine, phenylalanine, arginine, and proline are amino acids associated with the quality and flavor of chicken meat [22]. In the current study, the amino acid

ratios indicated that threonine, methionine, and histidine had the highest percentages in imported chicken. This result does not align with previous studies [23]. Locally grown slow-growing chicken meat shows a higher content of functional amino acids compared to fast-growing broiler chicken, reflecting its superiority in physiological and nutritional aspects. Chicken meat is one of the widely consumed animal foods due to its comprehensive range of amino acids, which are essential nutrients that contribute to human health and vital functions[32]. The ratios of amino acids in poultry muscles are influenced by several factors related to diet, age[24], type, and breed[25,26]. All these factors affect the quality and flavor of poultry meat[27]. The current study results indicate that arginine had higher percentage levels in the major and minor pectoral and thigh muscles for the local type weighing 1.5 kg, while glutamic acid recorded a higher percentage in the leg muscles of the local type. In contrast, glutamic acid showed the highest percentage levels in the four studied muscles for the imported chicken at a weight of 1.5 kg, indicating that both arginine and glutamic acid have a clear impact on the flavor and quality of chicken meat[22,28]. Amino acids play a physiological role in regulating many vital processes within the body[29,30]. Amino acids are considered the building blocks in the formation of proteins, which play an important role in shaping and maintaining the body's tissues[31].

5. Conclusion

The current study showed that local chicken muscles contain higher levels of amino acids compared to imported chickens, with an increase in the essential amino acid arginine recorded in local chicken, while isoleucine decreased compared to imported chicken. These results highlight the importance of local chicken as a rich source of amino acids. The study also revealed the role of genetic factors, breeding patterns, and nutrition in determining the amino acid composition of muscle tissues, which was reflected in the differences between local and imported chickens. The study concluded that local chicken has a distinctive nutritional content of essential amino acids in its muscles, making it a high-quality protein source that can be relied upon to enhance local food security and improve the nutritional value of poultry products.

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References

[1] T. M., Mukhtaralievna &, R. M. Mukhtoralievna, "Poultry meat and its processed products," *American Journal of Applied Science and Technology*, 2(10), 35-40.(2022). DOI:https://doi.org/10.37547/ajast/Volume02Issue10-06.

[2] A. Okruszek, J. Wołoszyn, G. Haraf, A. Orkusz, & M. Wereńska, (2013). Chemical composition and amino acid profiles of goose muscles from native Polish breeds. Poultry Science, 92(4), 1127-1133.DOI: https://doi.org/10.3382/ps.2012-02486.

[3] S. A. Jilo, & L. A. Hasan, "The Importance of Poultry Meat in Medicine: A Review," *Journal of World's Poultry Research*, 12(4), 258-262. (2022). DOI:https://dx.doi.org/10.36380/jwpr.2022.28.

[4] Lopez, M. J., & Mohiuddin, S. S. (2024). Biochemistry, essential amino acids. In StatPearls [Internet]. StatPearls Publishing. DOI:https://doi.org/10.1016/j.ab.2017.03.021.

[5] C. B. Newgard, J. An, J. R. Bain, M. J. Muehlbauer, R. D. Stevens, L. F. Lien, ... & L. P. Svetkey, "A branched-chain amino acid-related metabolic signature that differentiates obese and lean humans and contributes to insulin resistance," *Cell metabolism*, 9(4), 311-326. (2009). DOI: https://doi.org/10.1016/j.cmet.2009.02.002.

[6] M. Neinast, D. Murashige, & Z. Arany, "Branched chain amino acids," *Annual review of physiology*, 81(1), 139-164. (2019). DOI: https://doi.org/10.1146/annurev-physiol-020518-114455.

[7] D. L. Plotkin, K. Delcastillo, D. W. Van Every, K. D. Tipton, A. A. Aragon, & B. J. Schoenfeld, "Isolated leucine and branched-chain amino acid supplementation for enhancing muscular strength and hypertrophy: A narrative review," *International journal of sport nutrition and exercise metabolism*, 31(3), 292-301. (2021). DOI:https://doi.org/10.3390/nu14235069.

[8] A. Dalle Zotte, E. Gleeson, D. Franco, M. Cullere, & J. M. Lorenzo, "Proximate composition, amino acid profile, and oxidative stability of slow-growing indigenous chickens compared with commercial broiler chickens," *Foods*, 9(5), 546. (2020). DOI:https://doi.org/10.3390/foods9050546.

[9] A. Gheorghe, M. Hăbeanu, N. A. Lefter, R. P. Turcu, M. Tudorache, & I. Custură, "Evaluation of muscle chemical and amino acids composition in broiler chicks fed sorghum or sorghum-pea diets," *Brazilian Journal of Poultry Science*, 23(04), eRBCA-2021.DOI: https://doi.org/10.1590/1806-9061-2021-1447.

[10] J.M. Sulaiman, N. Al-Awaimer, A.A. Suwailem, R. Al-Houtan, M.M. Qaid, M.M. Azzam, E.O. Hussein, "Does slaughter age affect amino acid and lipid levels and health and nutritional values of breast muscles of male and female broiler chickens? ," *Poultry Science*, 102(11), 103085. (2023). https://doi.org/10.1016/j.psj.2023.103085

[11] D. Franco, D. Rois, J. A. Vázquez, L. Purriños, R. González, & J. M. Lorenzo, "Breed effect between Mos rooster (Galician indigenous breed) and Sasso T-44 line and finishing feed effect of commercial fodder or corn," *Poultry Science*, 91(2), 487-498. (2012).DOI: https://doi.org/10.3382/ps.2011-01546.

[12] A. Trocino, A. Piccirillo, M. Birolo, G. Radaelli, D. Bertotto, E. Filiou, ... & G. Xiccato, "Effect of genotype, gender and feed restriction on growth, meat quality and the occurrence of white striping and wooden breast in broiler chickens," *Poultry science*, 94(12), 2996-3004. (2015). https://doi.org/10.3382/ps/pev296

[13] N. Chaiwang, K. Marupanthorn, N. Krutthai, W. Wattanakul, S. Jaturasitha, C. Arjin, ... & P. Setthaya, "Assessment of nucleic acid content, amino acid profile, carcass, and meat quality of Thai native chicken," *Poultry Science*, 102(11), 103067. (2023). https://doi.org/10.1016/j.psj.2023.103067

[14] R. Dahl-Lassen, J. van Hecke, H. Jørgensen, C. Bukh, B. Andersen, & J. K. Schjoerring , "High-throughput analysis of amino acids in plant materials by single quadrupole mass spectrometry," *Plant Methods*, 14, 1-9. (2018). DOI:https://doi.org/10.1186/s13007-018-0277-8.

[15] P. Fürst, L. Pollack, T.A. Graser, H. Godel, and P. Stehle, "Appraisal of four pre-column derivatization methods for the high-performance liquid chromatographic determination of free amino acids in biological materials", Journal of Chromatography, 4(99): 557-569. (1990). DOI:https://doi.org/10.1016/S0021-9673(00)97000-6.

[16] W. He, P. Li, & G. Wu, "Amino acid nutrition and metabolism in chickens. Amino acids in nutrition and health: Amino acids in the nutrition of companion," *zoo and farm animals*, 109-131. (2021). DOI: https://doi.org/10.1007/978-3-030-54462-1_7.

[17] B.A. Ochieng, W.O. Owino, JN Kinyuru, JN Mburu, MG Gicheha, "Effect of low tannin sorghum based feeds on broiler meat nutritional quality," *Journal of Agriculture and Food Research* 2020;2:100078. DOI:https://doi.org/10.1016/j.jafr.2020.100078.

[18] G. Haraf, J. Wołoszyn, A. Okruszek, Z. Goluch, M. Wereńska, & M. Teleszko, "The protein and fat quality of thigh muscles from Polish goose varieties," *Poultry Science*, 100(4), 100992. (2021). DOI: https://doi.org/10.1016/j.psj.2021.01.015.

[19] M. Machado, S. Machado, F. B. Pimentel, V. Freitas, R. C. Alves, & M. B. P. Oliveira, "Amino acid profile and protein quality assessment of macroalgae produced in an integrated multi-trophic aquaculture system," *Foods*, 9(10), 1382. (2020). DOI: https://doi.org/10.3390/foods9101382.

[20] G. Wu, "Functional amino acids in growth, reproduction, and health," Advances in nutrition, 1(1), 31-37. (2010). DOI: https://doi.org/10.3945/an.110.1008.

[21] A. D. Dalle Zotte, G. Tasoniero, G. Baldan, & M. Cullere, "Meat quality of male and female Italian Padovana and Polverara slow-growing chicken breeds," *Italian Journal of Animal Science*, 18(1), 398-404. (2019). DOI:https://doi.org/10.1080/1828051X.2018.1530963.

[22] M. Ali, S. Y. Lee, J. Y. Park, S. Jung, C. Jo, & K. C. Nam, "Comparison of functional compounds and micronutrients of chicken breast meat by breeds," *Food science of animal resources*, 39(4), 632. (2019). DOI:https://doi.org/10.5851/kosfa.2019.e54.

[23] J. H. Choe, K. C. Nam, S. Jung, B. N. Kim, H. J. Yun, & C. R. Jo, "Differences in the quality characteristics between commercial Korean native chickens and broilers," *Food Science of Animal Resources*, 30(1), 13-19. (2010). DOI:https://doi.org/10.5851/kosfa.2010.30.1.13.

[24] G. Wu, F. W. Bazer, Z. Dai, D. Li, J. Wang, & Z. Wu, "Amino acid nutrition in animals: protein synthesis and beyond," *Annu. Rev. Anim. Biosci*., 2(1), 387-417. (2014). DOI:https://doi.org/10.1146/annurev-animal-022513-114113.

[25] E. Straková, P. Suchý, I. Herzig, & P. Marada, "Amino Acid Levels In Muscle Tissue Of Six Wild Feathered Species," Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 64(5). (2016). DOI:https://doi:10.11118/actaun201664051661.

[26] S. Deng, T. Xing, C. Li, X. Xu, & G. Zhou, "The effect of breed and age on the growth performance, carcass traits and metabolic profile in breast muscle of Chinese indigenous chickens," *Foods*, 11(3), 483. (2022). DOI:https://doi.org/10.3390/foods11030483.

[27] M. J. Kim, R. Parvin, M. M. H. Mushtaq, J. Hwangbo, J. H. Kim, , J. C. Na, ... & H. C. Choi, "Influence of monochromatic light on quality traits, nutritional, fatty acid, and amino acid profiles of broiler chicken meat," *Poultry Science*, 92(11), 2844-2852. (2013). DOI:https://doi.org/10.3382/ps.2013-03159.

[28] A. X. Huang, J. J. Li, J. D. Shen, Z. R. Tao, J. D. Ren, G. Q. Li, ... & L. Z. Lu, "Effects of crossbreeding on slaughter traits and breast muscle chemical composition in chinese chickens," *Brazilian Journal of Poultry Science*, 13, 247-253. (2011). DOI:https://doi.org/10.1590/S1516-635X2011000400005.

[29] C. Bortoluzzi, S. J. Rochell, & T. J. Applegate, "Threonine, arginine, and glutamine: Influences on intestinal physiology, immunology, and microbiology in broilers, " *Poultry Science*, 97(3), 937-945. (2018). DOI:https://doi.org/10.3382/ps/pex394.

[30] B. C. Debnath, P. Biswas, & B. Roy, "The effects of supplemental threonine on performance, carcass characteristics, immune response and gut health of broilers in subtropics during pre-starter and starter period," *Journal of animal physiology and animal nutrition*, 103(1), 29-40. (2019). DOI:https://doi.org/10.1111/jpn.12991.

[31] M. S. Babiker, S. A. Abbas, C. Kjora, & J. Danier, "The Effect of Dietary Protein and Energy Levels During the Growing Period of Egg-type Pullets on lnternal Egg Characteristics of, " *International Journal of Poultry Science*, 10(9), 697-704. (2011). DOI:https://doi.org/10.3923/ijps.2011.697.704.

[32] H. X. Tian, Y. J. Zhang, C. Chen, L. Qin, L. Z. Xiao, H. R. Ma, & H. Y Yu, "Effects of natural ingredients on the shelf life of chicken seasoning, " Food Chemistry, 293, 120-126.2019)).DOI: https://doi.org/10.1016/j.foodchem.2019.03.084.

[33] C. G. Scanes, & S. Dridi, "Protein metabolism," In Sturkie's Avian Physiology (pp. 661-686). (2022). Academic Press.DOI: https://doi.org/10.1016/B978-0-12-819770-7.00016-5.

[34] S. Adhikari, M. Schop, I. J. de Boer, & T. Huppertz, "Protein quality in perspective: a review of protein quality metrics and their applications," Nutrients, 14(5), 947.2022)). DOI:https://doi.org/10.3390/nu14050947.

[35] G. Wu, "Dietary requirements of synthesizable amino acids by animals: a paradigm shift in protein nutrition," Journal of animal science and biotechnology, 5, 1-12. 2014)).DOI: https://doi.org/10.1186/2049-1891-5-34.

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تقدير الأحماض الأمينية في أربع مناطق عضلية للدجاج اللاحم المحلي والمستورد (*Gallus gallus domesticus*)

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معلومات البحث

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الكلمات المفتاحية

Gallus gallus ، دجاج التسمين ، جودة اللحم ، العضلات ، الأحماض الأمينية .

الملخص

لحم الدواجن مهم جداً في النظام الغذائي البشري بسبب محتواه العالي من الأحماض الأمينية، التي تعتبر ضرورية للنمو. لذلك كانت هذه الدراسة تهدف إلى تحديد نسب الأحماض الأمينية في أربعة أجزاء من العضلات الصدرية الكبرى، الصدرية الصغرى، الفخذية، والساقية لكل من الدجاج المحلي (*Gallus gallus*) والدجاج المستورد .(*Gallus gallus* Ross 308) تم استخدام ثلاثة أوزان مختلفة (0.5، 1.0، و1.5 كغم) من الدجاج. جُمِعَت العينات من يوليو إلى سبتمبر 2024. وفقاً للنتائج الحالية، تم الحصول على 16 حمضاً أمينياً وتم تصنيفها كأحماض أمينية أساسية (8) وغير أساسية (8). الأحماض الأمينية الأساسية التي تم توفيرها هي الأرجينين، الليسين، الثريونين، الإيزوليوسين، الميثيونين، الهيستيدين، الليوسين، والفينيل ألانين، بينما الأحماض غير الأساسية هي الأسبارتك، السيرين، الألانين، الجلوتاميك، التيروزين، الكلايسين، السيستين، والبرولين. أظهرت النتائج الحالية أنه في كلا النوعين وبكافة الأوزان، كان الإيزوليوسين له أقل نسبة من الأحماض الأمينية في العضلات المدروسة. على عكس الايزوليوسين ، كان الأرجينين وحمض الجلوتاميك لهما أعلى النسب إحصائياً في كلا النوعين. بينما في النوع المحلي، كانت نسبة هذا الحامض الاميني أعلى من تلك في النوع المستورد. الأحماض الأمينية في الدواجن تلعب دوراً حيوياً في النظام الغذائي البشري.

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