

## CATEGORIES OF TURKEY MEAT AND COMPREHENSIVE EVALUATION OF ITS QUALITY INDICATORS

**Makhzuna Turdialiyeva**

Phd, Senior Lecturer

Tashkent institute of chemical technology,

Republic of Uzbekistan, Tashkent

**Abstract:** The article presents a comparative analysis of turkey meat categories in accordance with international regulations and standards (ISO, EU, USDA, GOST 31479-2012). The influence of domestic turkeys' diet on the content of proteins, fats, and carbohydrates in their meat has been determined. It has been established that the absence of synthetic growth promoters, antibiotics, heavy metals, and toxic compounds has a positive effect on the chemical composition and nutritional value of the product. The importance of strict control over poultry feeding to ensure high-quality meat is substantiated. The research findings reveal significant differences between various categories of turkey meat, which is of practical value for producers, nutrition specialists, and consumers.

**Keywords:** turkey meat, international standards, category, chemical composition, antibiotics, biostimulants, heavy metals.

### INTRODUCTION

Poultry farming is currently a dynamically developing branch of animal husbandry, which occupies one of the leading positions in providing meat and eggs to the population. The high importance of the industry is explained by the ability of poultry to efficiently convert plant and animal feed into products with high biological and nutritional value. One of the key tasks of poultry specialists is the stable satisfaction of the population's needs for high-quality food. [1].

Turkey farming is a highly efficient branch of poultry farming that ensures the production of one of the most valuable and high-quality types of meat among poultry. Turkey meat is highly digestible and easily digestible in the human body, which makes it recommended for therapeutic and dietary nutrition. Turkey meat contains a higher amount of full-fledged proteins compared to meat of other types of poultry, which determines its high nutritional and biological value. [2].

The qualitative characteristics of turkey meat and meat products ensure their high competitiveness compared to meat from other types of poultry and make them more in demand in the production of food products, including specialty products. [3].

The purpose of this study is to analyze turkey meat categories in accordance with international standards, determine its quality indicators and study the effect of diet on the chemical composition of the product. In addition, the paper examines how the quality indicators and composition of turkey meat change in the absence of synthetic biostimulators of growth, antibiotics, heavy metals and toxic substances in the feed.

### MATERIALS AND METHODS

Meat and meat products in the commodity nomenclature of foreign economic activity of the Republic of Uzbekistan are classified in section I (groups 02 and 03) "Live animals; products of animal origin" and section IV (group 16) "Prepared food products; alcoholic and non-alcoholic beverages and vinegar; tobacco and its substitutes". [4].

Meat and meat products are one of the main components of the human diet, and their importance in nutrition cannot be overestimated. According to the recommendations of the experts of the World Health Organization, the average annual consumption of meat per capita should be about 80 kg. However, today the products produced by state and private enterprises of the meat industry do not fully meet the needs of the population. Statistical data also confirm the growing

trend in imports of meat (including poultry meat) and meat products to the Republic of Uzbekistan. [5].

Control over the chemical composition, quality and safety of poultry meat produced in our country or imported from abroad is an important responsibility of the Ministry of Health, the State Committee for Veterinary Medicine and Livestock Development, as well as the Agency for Technical Regulation of the Republic of Uzbekistan.

The chemical composition of poultry meat depends on its type, age and fat content. The muscle fibers of poultry contain little fat and are located in the gaps between the skin. Poultry meat is a source of B vitamins: B<sub>1</sub>-thiamine, B<sub>3</sub>-pantothenic acid, B<sub>6</sub>-riboflavin, phenaxin, B<sub>12</sub>-cyanobalamin, folic acid and niacin [6].

The live weight of fleshy turkeys is heavy, the turkey (male) has a mass of 8-18 kg, and the turkey (female) 4-9 kg. After complete cleaning, up to 57-60% of meat can be obtained from such turkeys.

Poultry broilers mature especially quickly, reaching 9-15 kg in 16-22 weeks. The appearance of the broiler has dietary advantages, being tender and tasty. Such meat contains 9-22% protein, fat content up to 2-5% [7].

## RESULTS AND DISCUSSION

### International standards for the classification of turkey meat.

Turkey meat in international practice is usually divided into two main categories. This classification is used in the Russian Federation and the countries of the Commonwealth of Independent States (CIS), the United States of America (USA), the International Organization for Standardization (ISO), the European Union (EU), as well as in a number of other major food producing countries. In some developed countries, additional differentiation of turkey meat to higher levels is allowed (for example, premium or organic meat), but the basic classification system is mainly based on two categories. [8].

Подходы международных организаций к классификации мяса индейки являются следующими:

The approaches of international organizations to the classification of turkey meat are as follows:

#### 1. Classification of the Russian Federation and CIS countries (GOST 52820-2007)

In the Russian Federation and the CIS countries, turkey meat is classified in accordance with the GOST 52820-2007 standard:

- **1st category** - high-quality meat. The meat tissue should be smooth, well-developed and contain a minimum amount of fat.
- **Category 2** – meat of lower quality, may contain more fat or have a heterogeneous muscle structure. This type of turkey meat is recommended for processing.

#### 2. United States Classification (USDA – United States Department of Agriculture)

The United States Department of Agriculture (USDA) divides turkey meat into the following 2 main categories:

- **Grade A (1st category)** – the highest quality turkey meat. The appearance, fat content and muscle mass are uniform, all parts are well formed. The meat is soft, smooth and has a good moisture level.
- **Grade B & C (2nd category)** – intended for commercial use and recycling. This meat may have less stringent external requirements, be less fatty, or have a more dense muscle structure. It is most often used for the production of sausages, minced meat and canned food.

#### 3. Classification of the European Union (EU)

According to EU food standards, turkey meat is also divided into 2 categories:

- **Category A (1st category)** – high-quality turkey meat. The appearance should be good, smooth and with a uniform fat layer. Such meat is sold fresh and in its whole form.
- **Category B (2nd category)** - meat of lower quality, muscle deformities may be present. This type of meat is more commonly used in processed foods.

Based on the above analysis, Table 1 provides information on turkey meat categories in accordance with the requirements of international standards.

**Table 1:**  
**In accordance with international standards for turkey meat categories**

| Standard                             | Classification criteria  |
|--------------------------------------|--|
| <b>GOST 31479-2012 (Russia, CIS)</b> | Turkey meat is divided into <b>1st and 2nd</b> categories.   |
| <b>USDA (USA)</b>                    | <b>Grade A (1st category)</b> – high quality, Grade B & C (2nd category) – suitable for recycling. |
| <b>ISO (International Standard)</b>  | It is estimated by the moisture content of meat, fat content, protein composition and structure.   |
| <b>The European Union</b>            | <b>There are Category A</b> (high quality) and <b>Category B</b> (meat intended for processing).   |

According to the requirements of international standards, the differences between turkey meat of the 1st and 2nd categories are shown in Table 2.

**Table 2:**  
**Differences between the 1st and 2nd categories of turkey meat according to international standards**

| Criteria                    | 1st category of turkey meat (Grade A, Category A) | 2nd category of turkey meat (Grade B, Category B)            |
|-----------------------------|---|--|
| <b>Quality level</b>        | Top quality, soft and juicy                       | Relatively low quality, slightly tougher                     |
| <b>Appearance</b>           | Smooth, without fat layers                        | Sometimes bumps and fatty layers may be present.             |
| <b>Protein content</b>      | 22-24%  | 18-21%   |
| <b>Fat content</b>          | 5-10%   | 10-15%   |
| <b>Energy value</b>         | 110-130 kcal                                      | 140-180 kcal   |
| <b>Scope of application</b> | It is used fresh                                  | It is more often used for processing (sausages, canned food) |
| <b>Dietary properties</b>   | Excellent   | Good   |

Thus, turkey meat is divided into two main categories depending on its quality characteristics. Each category differs in chemical composition, fat content, protein level and energy value of the product.

Tables 3, 4 and 5 show data on the quantities and energy value of the ingredients contained in turkey meat of the 1st and 2nd categories, which are fed at home, that is, they are free, enjoy sufficient sunlight, eat without adding biostimulants, antibiotics to their food, which are all synthetic [5, 9]. [5, 9].

**Table 3:**  
**Energy value of 100 g of turkey meat, which is fed at home**

| Meat category                | Water (%) | Proteins (g) | Fats (g) | Carbohydrates (g) | Ash (%) | Energy value (kcal) |
|------------------------------|-----------|--------------|----------|-------------------|---------|---------------------|
| 1st category of turkey meat  | 57,3      | 19,5         | 12,3     | 0,4               | 0,9     | 183                 |
| 2nd category of turkey meat  | 64,5      | 21,6         | 5,2      | 0,5               | 1,1     | 147                 |
| 1st category of broiler meat | 68,0      | 18,8         | 11,7     | 0,6               | 0,9     | 182                 |
| 2nd category of broiler meat | 71,2      | 21,7         | 5,0      | 0,5               | 1,0     | 134                 |

**Table 4:**  
The mass of vitamins in the amount of 100 g of turkey meat, fed at home

| Meat category                | A (mg) | B <sub>1</sub> (mg) | B <sub>2</sub> (mg) | PP (mg) | C (mg) | Каротин (mg) |
|------------------------------|--------|---------------------|---------------------|---------|--------|--------------|
| 1st category of turkey meat  | 0,04   | 0,07                | 0,04                | 7,8     | 0,00   | 0,00         |
| 2nd category of turkey meat  | 0,03   | 0,03                | 0,03                | 8,0     | 0,00   | 0,00         |
| 1st category of broiler meat | 0,03   | 0,07                | 0,2                 | 7,6     | 0,00   | 0,00         |
| 2nd category of broiler meat | 0,03   | 0,07                | 0,2                 | 11,2    | 0,00   | 0,00         |

**Table 5:**  
The mass of minerals in the amount of 100 g of turkey meat, fed at home

| Meat category                | Na (mg) | K (mg) | Ca (mg) | Mg (mg) | P (mg) | Fe (mg) |
|------------------------------|---------|--------|---------|---------|--------|---------|
| 1st category of turkey meat  | 90,0    | 210,0  | 16,0    | 19,0    | 200,0  | 1,40    |
| 2nd category of turkey meat  | 100,0   | 257,0  | 18,0    | 25,0    | 2220,0 | 1,80    |
| 1st category of broiler meat | 80,0    | 21,0   | 11,0    | 15,0    | 1950,0 | 4,0     |
| 2nd category of broiler meat | 90,0    | 230,0  | 15,0    | 22,0    | 210,0  | 5,0     |

### Conclusion

Thus, it can be concluded that the chemical composition of turkey meat grown in poultry farms using feeds containing various chemical additives to increase body weight and other production purposes differs significantly from the indicators presented in the tables above. In this regard, in order to protect the rights and health of consumers, the content of antibiotics, hormones and growth stimulants, heavy metals and toxic substances in turkey meat should be strictly controlled by the relevant regulatory authorities.

### Список литературы:

1. Бобылева, Г.А. Тенденции развития отрасли птицеводства / Г.А. Бобылева // Птица и птице продукты. – 2014. – № 4. – С. 14–17.
2. Гасилина, В.А. Изучение показателей химического состава белого и красного мяса индеек в промышленных условиях Красноярского края / В.А. Гасилина, Л.И. Тарарина // Вестник КрасГАУ. – 2010. – № 9 (48). – С. 143–147.

3. Меретукова Ф.Н., Абрегова Н.В. Исследование показателей качества полуфабрикатов из мяса индейки, приготовленных по технологии су-вид. Новые технологии / *New technologies*. 2021;17(2):48-55.
4. Товарная номенклатура внешнеэкономической деятельности Республики Узбекистан (версия 2022 года)
5. Турдалиева М.М., Хамракулов М.Г., Хамракулов Г.Х. Исследование образцов мяса индейки при помощи метода оптико-эмиссионной спектроскопии произведенной в некоторых странах // *Universum: технические науки: электрон. научн. журн*. 2024. 4(121).
6. **Jukna, V., Rekštys, V., Švirmickas, J., & Leikus, R.** (2012). Chemical Composition of Poultry Meat. ResearchGate. Retrieved from [https://www.researchgate.net/publication/299674756\\_Chemical\\_Composition\\_of\\_Poultry\\_Meat](https://www.researchgate.net/publication/299674756_Chemical_Composition_of_Poultry_Meat)
7. Aviagen Ross-308 Broiler Performance Objectives, 2023 ([Aviagen.com](https://www.aviagen.com))
8. Бобылева, Г.А. Международный стандарт ЕЭК ООН «Мясо индеек. тушки и части» / Г.А. Бобылева, В.В. Гушин // *Птица и птицепродукты*. – 2013. – № 3. – С. 13–15.
9. Турдалиева М.М., Хамракулов М.Г., Хамракулов Г.Х. Исследование остатков антибиотиков в мясе индейки с помощью метода высокоэффективной жидкостной хроматографии // *Universum: технические науки: электрон. научн. журн*. 2024. 12(129).