

The importance of biologically valuable poultry meat in human nutrition

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Summary

Poultry meat is a source of valuable protein and essential amino acids and has a relatively little, while quality fat and it is used in a large volume for producing a quality desired meat products in the market. While respecting the correct technology (GMP- good manufacturing) and hygienic (GHP - good hygienic practice), mainly during the slaughtering and then during the cooling of a poultry meat, there are not any damages of sensitive substances and any hazard of microbial contamination. It is well managed to offer for the consumer a safe and biologically valuable food and raw material for the production of meat products from the poultry meat.

أهمية القيم البيولوجية للحم الدواجن في تغذية الإنسان

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الخلاصة:

لحوم الدواجن مصدر قيم للبروتين والحوامض الأمينية الأساسية , وجودة الدهون الموجودة فيها تستخدم في كميات كبيرة لإنتاج منتجات لحوم عالية الجودة ومرغوبة في الأسواق مع ضرورة التقيد بشروط التكنولوجيا والممارسات الصحية لعمليات الإنتاج لاسيما خلال عمليات الذبح والتبريد وتحاشي حدوث التلف أو إضرار المواد الحساسة ومخاطر التلوث البكتيري, وبإشراف إدارة جيدة لتصنيع منتجات لحوم الدواجن محتفظة بالقيم البيولوجية وتأمين صحة المستهلك .

Introduction

Foods provide the consumer with basic energetically and nutritionally important substances that are complemented by a wide range of other existentially important

components. We distinguish foodstuffs of plant and animal origin according to the type of resources. The large volume of food of animal origin in our diet consists right of meat and meat product.(1)

More precisely the word meat means skeletal muscles of ("food") animals and related animal tissues, in a broader meaning and less common sense it means all edible parts of bodies of animals, which are intended for human consumption (bone tissue, tendons, cartilage, fat and nerves, blood, intestine including guts). Meat is one of the fundamental food of animal origin and for its taste characteristics has become favorite part of our daily meal. Meat, including pork, is in terms of statistics known as the "meat on the bones", which is expressed in mass slaughter halves including bones and the corresponding share of guts .

It adds an important part of nutrition - biologically nearly full of proteins, playing an important role in the construction and renewal of cells, are an important source of energy and play an important role in body metabolism. Meat has therefore biological value which is affected by the content of full-value proteins ,(8%) vitamins B ,(1%) minerals (phosphorus, potassium, magnesium, sodium, calcium)and microelements (zinc, manganese). Furthermore, it has an energetic value which is determined primarily by the fat content (25-1) according to body parts) and water (about (70% in meat, and sensory value, which is affected by the amount of sensory active (extractive) substances in meat, which is in the cooking processes leached partially and so gives the dishes a specific taste, has a slightly irrelative effect on the gastric activity and greatly enhance digestion.

Meat is probably the most controversial type of food at all; from the aspect of nutrition it is a source of complete protein, minerals, lipids, fats and microelements .

The suitability of meat for human consumption is a controversial topic

and there is no clear conclusion. There are many people who do not eat meat at all, or only some kind of it, either from an ethical beliefs or for other reasons. Generally, a person who does not eat any kind of meat is called a vegetarian. Due to the vegetarian diet there is used large quantities of meat substitutes, soybean meal which should look and taste like real meat. Moreover there are ongoing attempts to create meat from animal tissues in laboratory conditions. There is a partial vegetarianism called vegetarianism, which allows the consumption of fish, seafood and chicken .

Fifty years ago the whole world "ate " 70million tons of meat every year. The growing popularity of meat dishes is also confirmed by existing data from the year ,2007 when the number reached 268 million tons. This increased the average consumption per capita; from 22 kg in 1961 to 40 kg. Among the largest consumers of meat surprisingly don't belong American lovers of hamburgers and steaks; the first are Luxembourg with consumption of 136.5 kg of meat per year .(2)

Poultry products have traditionally supplemented assortment of meat and meat products and represents a relatively large and gradually increasing ratio. And complement the „consumer basket" thank to its proper nutritional value .

In the Czech Republic meat consumption has been declining since 1989 ;however, globally meat consumption has more than quadrupled for the last fifty years. Czechs prefer pork and poultry meat. One Czech consumes 8 kilograms of beef 46.6 ,kg of pork 24.6 ,kg of poultry 0.2 ,kg of mutton or goat meat and 5.8 other kind of meat per year; in one year the Czech population consumes in an average

85.2kg of meat. Around twice the average meat consumption in the world .(3)

An important part of meat production in food industry is poultry, parts of carcasses poultry or a wide range of poultry products. In the above mentioned consumption of poultry

(24.6)kg / person / year) the central position belongs to whole chickens and chicken parts, whose consumption is roughly two-thirds of all poultry meat. Chicken dominates in poultry meat production; and its share in the consumption is formed, despite a stagnation during the last few years, the long-term upward trend; where the forecast for 2013 shows trend not below the level of 24 kg / person per year .¹The biggest increase in consumption of poultry meat stands for the United States. As indicated in Butchers newspaper, one of the key players on the market with meat is Russia, that has nearly balanced of poultry meat since the last year .(4)

From a nutritional point of view, poultry meat is physiologically valuable for the human body because it does not only deliver all the necessary components to the human body, but it is also an essential part of a modern and rational diet. Compared with beef and pork, poultry meat is renowned for its high content of quality protein .(5)

Due to the low fat content is of great importance especially for healthy nutrition. Poultry meat is delicate, fragile and easily digestible and can be easily combined with other foods. It has good taste properties and can be prepared in various ways ,ie .boil, braise, bake and fry. Therefore, the chicken one of the most popular meats in our kitchens. The composition of poultry meat is among the favorite meat and turkey, but we have a choice and flesh of geese, ducks, pheasant or

even ostrich, and a wide range of game .(6)

Material and Methods

In experimentally products 13 different groups of poultry meat we conducted sensory evaluation, determination of dry matter, nitrogen, nitrite, common salt. The average results of the dry matter, fat, protein, salt and nitrite brings Graph.1 .

All the analyzed products were tested bacteriologically by help of various media,as blood agar, meat peptone agar, broth and glucose agar. Results proved the products to be of good quality .

Protein determination using the Kjeldahl method.

Nitrogen is determined by heating a substance in sulfuric acid in the presence of a catalyst, during which nitrogenous substances are converted into ammonium sulfate. Alkaline hydroxide is used on the ammonium sulphate to displace the ammonia, which using water vapor, is distilled and captured in a solution of boric acid and is determined by titration. (7)

Fat determination

Fat was extracted from the homogenized sample in Soxhlet extractors 10 – .sample was transferred into an extraction shell and extracted 14 hours with chloroform–methanol mixture in the ratio 1 : 2 After evaporation of solvent, the extracted fat was weighed and its content was calculated in g 100/g .

Fat in g 100/g = extracted fat weight in g /100 . sample in g

Nitrite determination

The method used was based on nitrite interaction with a primary aromatic amine in acid solution to form a diazonium salt, which was later coupled with an aromatic compound to form an azo dye. Nitrite was then determined spectrophotometrically by

diazotization of sulphanilic acid and subsequent coupling with *N*-1-naphthalene)-ethylene diamante .In general, the ISO 2918 method was used, but extraction ,deproteinization and spectrophotometer determination were performed according to absorbance of the dye solutions was measured using a Beckman DU 640-spectrophotometer) .path length 1 cm.(8)

Determination of cooking salt

All chlorides in product recalculated to sodium chloride are considered to be cooking salt. The organic substances are burnt and all chlorides of the extract are determined by titration in silver nitrate .

The procedure 10-5 :g of powdered is placed into a dried porcelaneous crucible and allow to dry in a desiccators overnight and burnt to grayish ash in an oven for 4-2 hrs. Then the ash is rubbed with a glass rod. The carbonized content of the crucible is poured over with hot distilled water (to about half of the crucible) and quantitatively washed through a filtration paper in a 100 ml volumetric crucible. The ash from the crucible is rinsed on the filter and thoroughly washed with distilled water up to the mark. The filtrate is mixed and after cooling it is pipettes in the amount of 25 ml into a titration flask, diluted with 150 ml of distilled water, and 2 - 0.5 ml of %5 potassium chromate solution 2-1) liq. In titration flask) serves as indicator; titration with 0.1N of silver nitrite solution is run up to the appearance of rod discoloring , with does not dissipate when mixed .

Calculation: cooking salt in = %

$$. 0,5845s . f / n$$

s = consumption of 0.1 N solution of silver nitrite in ml

f = factor 0.1 N solution of silver nitrite = weight of sample in grams

Results and Discussion

When evaluating the results obtained can accentuate not only the basic composition of matter, but also the protein composition of individual products. Assume their biological value. It is possible to generalize that not all products of poultry meat are also biologically highly valuable because of their production of applying additional adjuvant or technological steps, this value decreasing raw poultry and debilitating. For example product "turkey and pheasant " does have the highest protein content 24.03) g 100 / g), yet not be this anniversary evaluate a nutritional point of view and especially diet, because he has almost twice as salt 5.52) g 100 / g) than is commonly included in food products. Also effort technologists, most fixed minimum level of red folders poultry used nitrite salt mixture, resulted in nitrite content of 5.15 mg 100 / g, which unnecessarily burdens the product potential carcinogens. Another technological step - smoked turkey breast muscle cold smoke 24 hours. Warm or smoke for 3 hours. Significantly reduces even technological significance of nitrite .

As an opposite example of a product with a lower level protein 17.48) g / 100g), can present the poultry brawn a cooked meat product. Adequate salt content 2.06) g 100 / g) and the absence of soul-carbonate, however, significantly improves the biological value products which is also supported by the absence of contaminants from smoke, because smoking is not included in the cooked product technology .

Conclusion

Consume poultry meat products, which can be identified as higher risk for contamination and spoilage than meat slaughter of large animals are protected

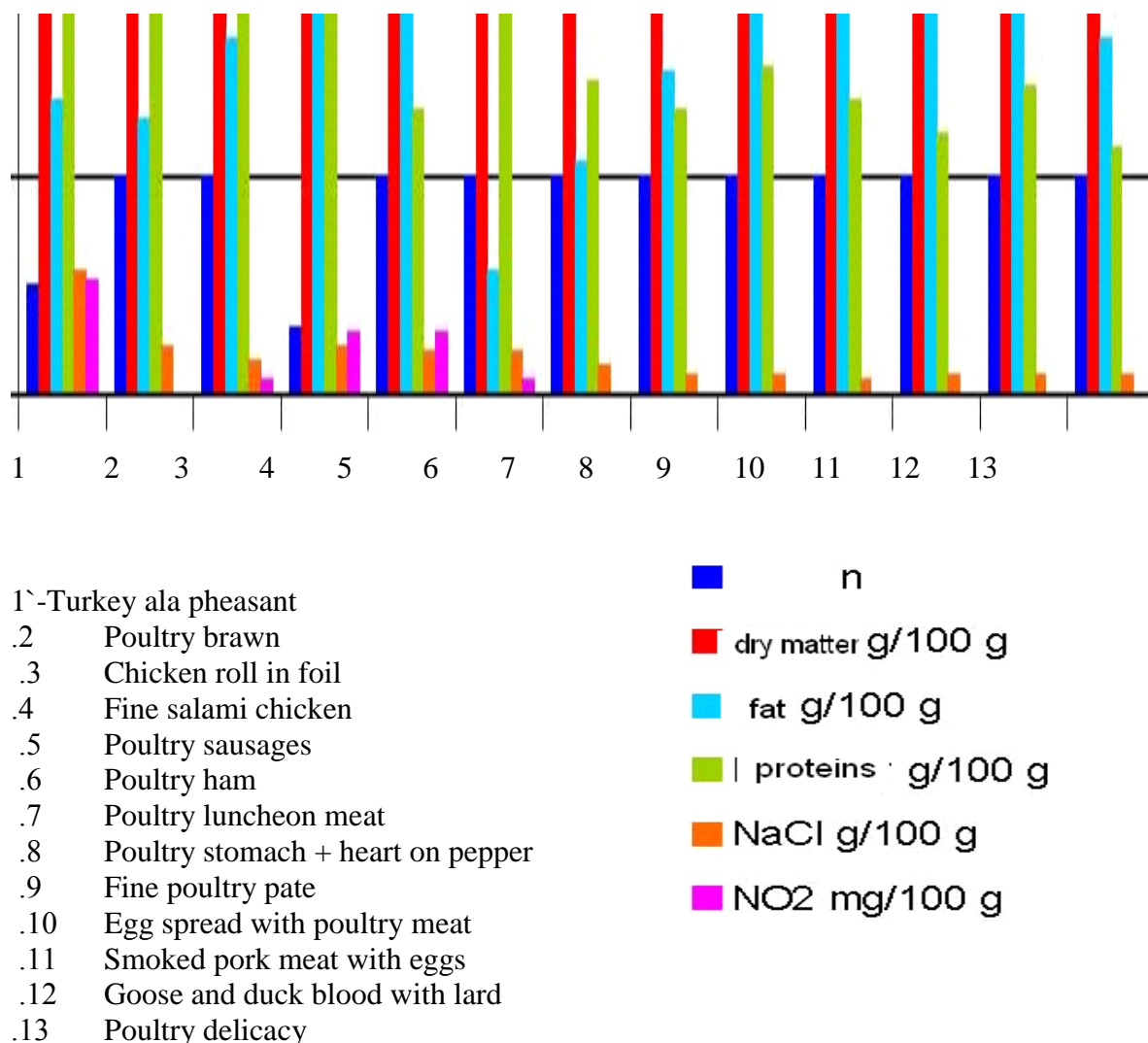
from the risk of infection undesirable micro flora maintaining good health in the case of broiler farms, consistent respecting technological procedures working and processing (Good Manufacturing Practice), hygienic discipline (Good hygienic practice) and carefully drawn up and operate a system to prevent against leakage risk food (HACCP), or detrimental to the health of the consumer Another extremely important step is a closed cold chain, particularly its rapid onset of post-mortem for poultry (especially fresh chilled), and continuity until

moment processing household consumer .

Recommendation

In the recent years of poultry meat has been ever growing preparation in daily consumption, as this meat is of importance in dietary nutrition of inhabitants .

According to the nutritive value and digestibility, poultry meat is classed with meats of the highest quality, necessary in building up of the body cells. Higher consumption of poultry meat is recommended the peoples on diet for gastritis, bile disorders, reduction of weight and diabetes .



Graph n :1 .Chemical composition of poultry meat products.

References

- 1-Kozak,A.: The development of the slaughtering of selected animals. Journal Maso International , .2012No,2.p162.-159 .
- 2-Teichmanova, J., Boudny,J.: Market for poultry meat in the Czech economy and fattening poultry Meat ,25,2014,No,4.p45.-38,
- 3-Maso, vol.2.No ,2013.p ,58-56. odborný časopis pro obor zpracování maso, Brno, Czech Republic.
- 4-Steinhauser, L.: Eastern markets . Butcher paper ,2013 ,3 No, 2.p10.-9.
- 5-Staruch,L.,Mati, M,Gomito, : The quality of meat products and type of protein in selected fermented meat products. Meat . Journal meat international,No 2,2012p38.-35.
- 6-Kamenik,J. : Maso jako produktce, solení a vlastnosti maso. Brno, Czech Republic, časopis Maso,2012,p. 330.
- 7-Meat international Journal, vol . , 1,2012p ,34-32.Brno, Czech Republic.
- 8-Bubrevický S. Sminov,V.Simko ,1989,Laboratorium technologie živočišných potravin, Bratislava. p .320 .