ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

New Standards Governing The Production Of Pork For Children Nutrition.

Ekaterina Petrovna Lisovitskaya[1]*, Natal'ja Jur'evna Sarbatova[2], Olga Vladimirovna Sycheva[3], and Lidiya Valentinovna Kononova[4].

[1]Krasnodar Research Center for Animal Husbandry and Veterinary Medicine, Pervomayskaya str., 4, Znamensky, Krasnodar 350055, Russia.
[2]Kuban State Agrarian University named after I.T. Trubilina, Kalinina str., 13, Krasnodar 350044, Russia.
[3]Stavropol State Agrarian University, Zootekhnicheskiy ln., 12, Stavropol 355017, Russia.
[4]All-Russian Research Institute of Sheep and Goat Breeding – branch of the Federal State Budgetary Scientific Institution «North Caucasian Agrarian Center», Zootechnicheskiy ln., 15, Stavropol 355017, Russia.

ABSTRACT

The article presents the main agrochemical, veterinary and sanitary requirements for animal suppliers and the principles of cultivation, fattening environmentally friendly pigs, their classification, agro-ecological monitoring of the quality and safety of feed and veterinary control of animals and pork, rules for accepting animals, requirements for quality of pork for products children nutrition, its classification.
Keywords: pigs, veterinary and sanitary requirements, technology, fattening, category of fatness, assessment methods, classification, quality, safety of pork.

Corresponding author

ISSN: 0975-8585

INTRODUCTION

In recent years, pork has become one of the main types of raw materials in the meat industry. Along with beef, pork is quite widely used in the nutrition of children, due to its high nutritional, biological value, and low allergenic properties. The latter is extremely important, due to the growing number of young children suffering from food allergies caused by intolerance to milk proteins and beef [1].

According to the "Doctrine of Food Security of the Russian Federation", the share of domestic meat and meat products (in terms of meat) in the total volume of commodity resources of the domestic market should be at least 85%. However, at present, enterprises producing meat products for children nutrition use no more than 30-50% of meat raw materials produced in Russia. Meat raw materials intended for the production of children nutrition are subject to strict requirements for safety and nutritional value, which makes adjustments to the technology of raising and feeding animals and requires unification of approaches to ensure strict environmental control at all stages of their cultivation and processing [2, 3].

An important role in ensuring the children nutrition industry with meat raw materials of the required quality is played by the application of standards that include requirements ranging from raising and fattening animals, advanced methods for assessing their quality, principles for classifying animals and raw meat. However, until recently, Russia had no national standards for a typical technological process of growing and fattening pigs and technical requirements for pork for the production of children nutrition. The industry worked mainly with the use of regulatory and technical documentation for meat raw materials for general purposes.

To correct the current situation, the VNIIMP specialists developed the national standard GOST 54048-2010 "Meat. Pork for children nutrition. Technical conditions", which applies to pork intended for the production of food for children from 6 months, and directly for sale to consumers.

Today, all large Russian children nutrition manufacturers (Unimilk, Wimm-Bill-Dann, Hame, Nutritek, etc.) have pork-based canned meat in an assortment for feeding children from 6 months of age.

RESULTS AND DISCUSSION

Pork has a number of properties that are capable of growing and developing a child's body: it contains a large amount of magnesium necessary for the formation of bone tissue and is rich in B vitamins, especially B1, which play a large role in maintaining the normal functioning of the digestive and nervous systems.

The lipid composition of pork is characterized by a high content of polyunsaturated fatty acids (PUFAs), especially linoleic, necessary for the children's body, as well as essential amino acids. Arachidonic acid contained in pork has biological activity, the absence or deficiency of which in the diet of a child retards his physical development. The results of assessing the balance of the fatty acid composition of various fat-containing ingredients by the ratio of the amounts of saturated, monounsaturated and polyunsaturated fatty acids in comparison with the standard used to assess the nutrient adequacy of children nutrition - mature female milk show that almost all vegetable oils are significantly inferior to fats of animal origin, among which the leader is pork fat.

The possibility of using pork in children nutrition for the production of a wide range of products - canned food, sausages and semi-finished products for children of early, preschool and school age is justified by many works of VNIIMP specialists together with employees of the Research Institute of Nutrition of the Russian Academy of Medical Sciences.

The developed standard for pork for children nutrition is closely interrelated and harmonized with the standard GOST R 53221-2008 "Pigs for slaughter. Pork in carcasses and half carcass ", however, there are a number of significant differences. These differences are associated with higher requirements in terms of safety and nutritional values, including restrictions on the fat content of meat. However, to date there has been no standard unifying the requirements for growing and fattening pigs for meat for children nutrition, which guaranteed production of meat of the required quality. And such an interstate standard (typical technological

process) was developed by experts of the North-Caucasian Research Institute of Livestock and the Kuban SAU in collaboration with VNIIMP.

For the production of products for young children, pork is used only low-fat (mass fraction of fat 13-17%) and limited to bold (mass fraction of fat 28-32%). In sausage products for feeding children older than 3 years, pork is used with lower fat content than in products for adults: bold with a fat content of 30-50% and fat with a fat content of 50-60%.

The basis for the production of high-quality children nutrition products that meet the level of domestic and international standards should be ecologically clean, safe livestock feedstock coming from certified specialized supply enterprises located in areas that are safe for zoonotic, zooanthropose diseases, in which animals are kept under strict veterinary and zootechnical rules of growing and fattening with the obligatory examination of animals on prion e diseases particularly dangerous to humans.

Animals must be subjected to preventive treatments in accordance with the plan and technological map of anti-epizootic measures, taking into account the local epizootic situation, determined by the chief veterinary doctor of the region in the territory of the state that adopted the standard. The plan of antiepizootic measures should include treatment and prophylactic treatments: deworming, disinsection, deratization, prophylactic disinfection.

Treatment of animals should be carried out with low-toxic detoxifying preparations with a short waiting period.

When raising animals, the standard requirements for maximum permissible concentrations of toxic substances in soil, feed and water must be complied with. Formulated requirements for food supply. Feed used in the cultivation and fattening of animals must be high-energy, benign and meet the established requirements for the level of toxic elements, pesticides, mycotoxins.

In the formulations and diets of pigs grown and fed for the production of children nutrition, the use of growth stimulants, including hormonal drugs, drugs, antibiotics, synthetic nitrogen-containing substances, raw materials containing genetically modified sources (rice, soybeans, corn, potatoes, beets containing GMS).

It is allowed to use imported seed, mixed fodder, protein-mineral-vitamin supplements, premixes, each batch of which is examined for the presence and content of regulated products and must have shipping documentation that ensures traceability of products.

A set of fodder crops and the technology of their cultivation involves the use of a plant protection system using agrotechnical and biological methods. Chemical plant protection products from pests, diseases and weeds should be allowed for use on the territory of the state that adopted the standard, and have a hazard class for humans not lower than 2 according to the classification of the World Health Organization (WHO).

Rations should be balanced in essential nutrients, energy value, dry matter content, digestible protein, critical amino acids, fiber, minerals, vitamins. Rations are counting on getting optimal for the breed average daily gain in live weight.

Technological periods of growing and fattening pigs are set depending on the characteristics of the enterprise.

The removal of meat pigs in the direction of productivity (non-piglet females and castrated males) from fattening and their delivery for slaughter is carried out at the age of 6-8 months. at achievement of live weight not less than 70 kg and no more than 150 kg. The thickness of the fat between the 6-7 thoracic vertebrae should be no more than 3.0 cm.

In terms of safety, pork as a raw material for the production of children nutrition should comply with the permissible levels given in the table regulated by the Technical Regulations of the TR CU 034 2013 “On the

safety of meat and meat products". It should be noted that permissible levels for some indicators are much higher than for general-purpose meat, which dictated the need to develop this standard.

Fulfillment of the requirements for growing pigs for the production of children nutrition, established by the developed interstate standard, will allow to receive guaranteed pork compliant with the national standard GOST R 54048-2010 "Meat. Pork for children nutrition. Technical conditions (table).

In accordance with this standard, the total phosphorus content in meat should not exceed 0.2%, which will exclude the possibility of supplying raw materials to the production of children nutrition products, in which phosphates and moisture-containing food additives containing them are introduced.

Table 1: Pork safety indicators in accordance with GOST R 54048-2010

Indicator	Content in meat			
	For children nutrition		General purpose	
	Permissible levels, mg / kg, not more than	Note	Permissible levels, mg / kg, not more than	Note
Toxic elements:				
lead	0,1	for children up to 3 years	0,5	
	0,2	for children over 3 years old		
arsenic	0,1		0,1	
cadmium	0,03		0,05	
mercury	0,01	for children up to 3 years	0,03	
	0,02	for children over 3 years old		
Antibiotics*:				
levomycetinum	not allowed	<0,01	not allowed	<0,01
tetracycline group	not allowed	<0,01 u/g	not allowed	<0,01 u/g
grisin	not allowed	<0,5 u/g	not allowed	<0,5 u/g
bacitracin	not allowed	<0,02 u/g	not allowed	<0,02 u/g
Pesticides**:				
HCH (α, β, γ - isomers)	0,01	for children up to 3 years	0,1	
	0,015	for children over 3 years old		
DDT and its metabolites	0,01	for children up to 3 years	0,1	
	0,015	for children over 3 years old		
Dioxins	not allowed		0,000001	in terms of fat

Currently, more and more attention is paid to the production of meat pigs with a high yield of muscle tissue. According to this indicator, animals produced by domestic pig farms, closer to farmed western companies.

Since for the production of children nutrition mainly non-fat raw materials are used, pork is only divided into two categories of fatness, taking into account the thickness of the fat (not more than 2 cm and not more than 3 cm), unlike the six categories provided by GOST R 53221-2008 "Pigs for slaughter . Pork in carcasses and half carcasses ".

In the current standard for assessing the quality of pork carcasses in terms of muscle output, pork is divided into five classes. The introduction of such a classification will contribute, in our opinion, to the development of meat breeds of pigs, which is very important, first of all, for the children nutrition industry.

CONCLUSION

Experts predict that in the coming years, the production of domestic pork and its quality will significantly increase [4]. The introduction of standards that ensure traceability and safety control, raising animals and obtaining meat from field to counter, which include advanced assessment methods and principles for the classification of animals and meat raw materials, will help ensure that enterprises producing children nutrition with raw materials of guaranteed quality and safety.

The work of livestock farms and enterprises of the industry in accordance with the requirements regulated by national standards for raising animals and pork, will increase the production of environmentally safe pork and the production of competitive products for children.

REFERENCES

[1] Zabashta, N.N. Production of organic meat raw materials for food / N.N. Zabashta, E.N. Golovko, S.V. Patiev // Saarbrücken: LAPLAMBERT Academic Publishing. - 2014. - p. 205.

[2] Meat quality of pig breeds for children nutrition / N.N. Zabashta, N.V. Sokolov, E.N. Golovko, A.V. Ustinova, S.V. Patiev // Meat industry. - 2013. - №6. - P.16-19.

[3] Features of growing and fattening pigs for meat for the production of children nutrition / Zabashta N.N., Patieva S.V., Lisovitskaya E.P., Patieva A.M., Ustinova A.V. // Pig breeding. - 2016. - №6. - pp. 35-38.

[4] Technology of production of organic meat raw materials for the creation of healthy food products / Patieva S.V., Zabashta N.N., Timoshenko N.V., Patieva A.M., Lisovitskaya E.P. // In the collection: Modern aspects of the production and processing of agricultural products Collection of articles based on materials of the II scientific-practical conference of students, graduate students and young scientists. Responsible for the release of A. A. Nesterenko. - Krasnodar, 2016. - p. 165-174.