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RISK-BASED CONTROL OF IDENTIFICATION OF MEAT OF SLAUGHTERED ANIMALS BY COLOR

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Abstract. Risk-oriented control of the identification of slaughter animal meat is important in the activities of veterinary medicine specialists in determining the quality and safety indicators of slaughter animal meat (pork, beef, veal, goat meat, mutton, horse meat) in the entire food chain during meat production clear raw materials, production of meat and meat products, transportation, their storage and sale. It is necessary to develop express patented methods for establishing the identification of the meat of slaughtered animals and implement them in the state laboratories of the State Production and Consumer Service of Ukraine.

Ключові слова: Pork, beef, veal, lamb, goat meat, horse meat, safety, quality, express methods, identification, risk-based control.

Introduction. One of the prerequisites for the introduction of the HACCP system is risk-oriented control over the processes of production, storage and circulation of meat for slaughter animals, namely, the identification of meat raw materials. Also, for the production of meat from slaughter animals and their circulation, not only GMP (good manufacturing practice), but also GHP (good hygienic practice) are implemented [1].

Identification of meat from slaughtered animals is a social problem. As a result of hiding a low-quality and dangerous food product or substituting one type of meat for another, violations and non-compliance with sanitary and hygienic requirements are carried out by operators of the food market during the production, storage and circulation of meat from slaughtered animals (wholesale bases, agro-food markets, supermarkets, etc.) [2−5].

Therefore, the development and application of simple tests for the identification of meat of slaughtered animals using patented photometric methods is now relevant, due to the avoidance of meat spoilage and its forgery.

The purpose of the work is to conduct a safety test of the meat of slaughtered animals to establish its identification using photometric methods.

Materials and methods. The material for the research was meat samples of slaughtered animals: pork - 28, beef - 24, veal - 16, lamb - 10, goat meat - 9, horse meat - 6, which were stored in wholesale bases. For the first time, the developed express method of identifying the meat of slaughter animals (pork, beef, veal, mutton, goat) was used according to the intensity of their color and the optical density was determined on a photoelectrocolorimeter. For the development of the method, muscle tissue from the longest back muscle was used: width 1.4–1.5 cm, height 2.7–2.8 cm, thickness 0.2–0.4 mm. The studied meat sample was placed in a cuvette with a thickness of 1.0 cm absorbing light. Then, the intensity of muscle tissue staining was measured on a photoelectric photometer (KFC-3) at a wavelength of 520–525 nm (green light filter). Distilled water was used as a control sample.

Results and discussion. Chilled meat of slaughter animals, which was stored in wholesale bases at temperatures from 0 to 6 °C, was examined by a developed

patented method and identified by color intensity. According to the organoleptic evaluation, the meat met the following indicators: the surface of the meat had a crust of drying, the smell is specific to this species of animal, without extraneous odors, the consistency is elastic, the color of beef, lamb is dark red, goat meat is bright red, pork, veal is pale - pink, horsehair - dark red. According to the cooking test, beef, pork, lamb and goat corresponded to the fresh degree.

Table 1

Indicators of meat identification of slaughter animals according to the developed patented method, Bel, M±m, n=93

Type of meat	Intensity of meat color according to the developed express method, Bel
Pork, n=28	1.468±.012 – 1.735±0.016
Beef, n=24	2.185±0.013 – 2.219±0.014
Veal, n=16	1.898±0.014 – 1.975±0.015
Lamb, n=10	2.360±0.017 – 2.408±0.016
Goat, n=9	2.140±0.013 – 2.163±0.012
Horse meat, n=6	3.651±0.019 – 3.815±0.018

According to the data in Table 1, it was established that the highest color intensity was in horse meat samples, which is 1.67–1.73 times more compared to the color intensity of beef and 1.92–1.94 times more compared to the color intensity of veal. The lowest color intensity was in pork, veal and goat meat samples [6].

Conclusions. The developed express method of identifying the meat of slaughter animals by the color intensity of samples when using the photometric method is quite simple in testing, has a high reliability of 99.9% in terms of quantitative values, and is widely used in state laboratories of the State Production and Consumer Service of Ukraine and in production state laboratories at facilities on the production and circulation of meat of slaughtered animals.

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