VETERINARY SCIENCES

EVALUATION OF THE DEGREE OF FRESHNESS OF POULTRY MEAT WHEN STORED BY THE NESLER NUMBER USING THE DEVELOPED EXPRESS METHOD

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Capacities for the production and storage of chilled poultry carcasses should implement a traceability system and a HACCP system for the identification and analysis of hazardous risks, management of critical control points with evaluation of these results [1, p. 154]. The effectiveness of traceability systems and HACCP makes it possible to produce safe and high-quality food products for ordinary consumers, which is relevant globally at Ukrainian processing plants. Risk-oriented control of poultry meat production and circulation facilities requires the development of express methods for determining its safety and quality [2, p. 98; 3, p. 16]. Requirements for safety and quality of poultry meat are regulated by current regulations [4, p. 12; 5, p. 8; 6, p. 11].

Scientists have paid considerable attention to the development of new rapid and improved methods of controlling food safety and quality [7, p. 149; 8, p. 113; 9, p. 37; 10, p. 49].

Our research has developed an express method for determining the safety and quality of poultry meat to determine the degree of freshness of poultry meat by the Nessler number during production and storage [11, p. 3].

The material for the study was chilled carcasses of gutted birds in a total of 36 samples of different degrees of freshness: fresh carcasses – for storage in a refrigerator at a temperature of 0−4 °C for 5 days; doubtful freshness – for 6–7 days for storage in a refrigerator at a temperature of 0–4 ° C; stale – more than 7 days for storage in a refrigerator at a temperature of 0−4 °C.

The developed express method was based on the quantitative determination of the Nesler number by determining the degree of freshness of poultry meat by using a filtered extract of poultry meat in a ratio of 1: 4 (5.0–5.1 g of poultry meat and 20 cm^3 of distilled water) in the amount of

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3.0–3.1 cm^3 with the addition of 1.0–1.1 cm^3 of Nessler's reagent for 4–5 minutes and subsequent centrifugation for 6–7 minutes at 1000 revolutions per minute and a comparison to the color of the dichromatic scale containing the Nessler number, which will ensure the degree of freshness of poultry meat during storage and sale.

Using the developed express method, we determined the degree of freshness of poultry meat of chilled carcasses at different times and storage temperatures of poultry carcasses by color intensity in 36 samples (Table 1).

Table 1

Indicators of the Nessler number for the intensity of the color of the extract from poultry meat with Nessler's reagent of different degrees of freshness, n = 36

The degree of freshness of poultry meat and the number of samples	Indicators of the Nessler number for the intensity of the yellow color of the extract from poultry meat with Nessler's reagent, in absolute units		
	Intensity of the color of the meat-water extract	Thigh of a bird	Bird's breast
Poultry meat is fresh, n = 12	olive yellow color	1,4 – 1,6	1,4 – 1,6
Poultry meat of dubious freshness, n=12	light yellow	1,8 – 2,4	1,8 – 2,4
Poultry meat is stale, n=12	intense yellow or orange color	more 2,4	more 2,4

It was determined that the Nessler number for the intensity of the yellow color of the extract from fresh poultry meat from the thigh and breast using Nessler's reagent was – 1.4 – 1.6; poultry meat of dubious degree from the thigh and breast – 1.8 — 2.4; lean poultry meat from the thigh and breast – more than 2.4.

The data obtained were stable and 99.9 % reliable, so these Nessler numbers can be used to determine the degree of freshness of poultry meat during storage and sale by color intensity according to the Nessler number. Also more reliable data – in 99.0–99.9 % were obtained in comparison with the results of studies of the microscopic method of determining the degree of freshness of poultry meat and in 99.4–99.8% of the results of studies to determine the content of amino-ammonia nitrogen in poultry meat [12, p. 43].

In addition, it should be noted that the method is rapid, easy to perform, economical in the preparation of reagents, and its results give specific quantitative indicators of the Nessler number on the intensity of the yellow extract of poultry meat using Nessler's reagent. This method can be used in

production laboratories of poultry meat production and processing facilities, wholesale bases, supermarkets, state veterinary laboratories and veterinary examination laboratories in agri-food markets, along with conventional methods of controlling the freshness of poultry meat.

When carrying out risk-based controls, veterinary inspectors should use simple tests to establish the safety and quality of poultry meat at poultry production and handling facilities to confirm the appropriate hygiene requirements for the timing and modes of production and storage of products [13, p. 15].

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