

THE EXPRESS METHOD FOR DETERMINING THE TOTAL TOXICITY OF MUSSEL MEAT

Khimych Mariia, Candidate of Veterinary Medicine, Associate Professor,
khimichms@gmail.com

Rodionova Kateryna, Candidate of Veterinary Medicine, Associate Professor,
katerina.rodionova@ukr.net

Odessa State Agrarian University

Introduction. Nutrition is one of the important factors affecting human health. Therefore, providing the population with high-quality and safe food products has an extraordinary social and epidemiological significance [5].

The safety of food products is one of the key problems today, because the vast majority of xenobiotics are extremely dangerous for humans [1, 4].

The leading factor in guaranteeing the safety of a food product is the availability of objective information about the value of standardized indicators. Such information is obtained by measuring the values of these indicators. An important condition for ensuring the reliability of measurement results is the correct choice of the method and means of measurement [2].

Specialists have developed a large number of analytical test methods aimed at determining the quantitative content of individual pollutants in food products [2, 4].

Modern test methods make it possible to detect even micro doses of pollutants in a food product. Due to this, scientists have come to the conclusion that there are no absolutely safe products because, in fact, every product component can be dangerous for one or another category of consumers [2].

At the same time, it is important to remember that analytical measurements are time-consuming and expensive, and the obtained results do not give an idea about the combined or synergistic effect of xenobiotics on the consumer's body. In addition, the use of these methods does not allow determining the general reaction of the body to the possible toxic effect of the researched product [4].

That is why, in order to ensure that consumers receive safe food products, it is necessary to develop new express methods for their proper control. The development of express methods that will allow a quick and objective assessment of the general toxicity of food products during storage and sale is especially relevant. [1, 2, 4]

The aim of the work is to develop a microbiological express method using of infusoria *Colpoda steinii* to determine the toxicity of mussel meat.

Materials and research methods. The objects of the study were mussel meat and the test culture of the infusoria *Colpoda steinii*. As a prototype, the methodology

outlined in the patent for a utility model of Ukraine “Method of determining the degree of toxicity of snail meat” (patent. 128928, Bul. No. 19/2018) and analog methods of own development – “Method of determining the toxicity of fish” (patent. 96714, Bul. No. 3/2015), “Method of determining the toxicity of milk and dairy products” (patent 109295, Bul. No. 16/2016) were used.

Research results. The analysis of the prototype method established that it has disadvantages and limitations that do not allow us to reliably determine the general toxicity of the product we are studying. It has been experimentally proven that the method is calculated exclusively for determining the toxicity of snail meat and gives reliable results for changes in the studied product. But the main disadvantage of this method is the ability to detect exclusively hydrophilic xenobiotics, because it is proposed to use distilled water as an extractant.

At the same time, we have developed similar methods of testing individual food products, for which it is proposed to use HC acetone as an extractant. Acetone allows the extraction of hydro- and lipophilic toxicants, which provides the possibility of detecting a wide range of toxicants in test samples.

The analysis of similar methods has established that the proposed ratios “weight of sample : volume of extractable substance” do not provide a reliable result during the study of mussel meat and require adaptation.

Through experimental studies, a microbiological express method was developed using the infusoria *Colpoda steinii* to determine the toxicity of mussel meat, using as an extractant substance acetone.

During the using of the developed extraction method, a selected amount of mussel meat (5 g) should be subjected to acetone taken in a volume of 8-15 cm³ (depending on the cold processing of the product). The test results are determined after thermostating (1 hour at a temperature of +26...+28°C) the test culture of *Colpoda steinii* infusoria with the resulting acetone extract solution, examining the working mixture under a microscope and counting the number of live and dead infusorias.

Conclusions. A microbiological express method for determining the toxicity of mussel meat has been developed [3], which allows to determine the content of a wide range of hydro- and lipophilic toxicants, thus providing reliable information about the total toxicity of the product for the consumer's body. It was experimentally proven that the data on toxic properties obtained for using the developed express method are identical to the results obtained using the classical method of biotesting with a biosample on white mice.

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UDC 636.5.09:616.34

THE EFFECTS OF VARIOUS ORGANIC ACIDS ON GROW PERFORMANCE AND GUT MICROBIOTA OF BROILER CHICKENS

Malancea Nicolae nicumalancea@gmail.com

Technical University of Moldova

Relevance. There is a tendency to optimize antibiotic use, including in broiler chickens rearing, due to concerns about antibiotic resistance in humans and production animals. To satisfy these requirements, the industry must maintain the lowest pathogenic pressure in the chicken's farms, allowing production of chicken meat without or with minimal use of antibiotics.

Meat consumption in the Republic of Moldova is constantly increasing. Thus, if in 2008, a person consumed, on average, 30.7 kg of meat annually, then in 2019 this figure amounted to 52.8 kg of meat.

Chicken gut microbiota have a strong relationship with the health and productivity of broiler chickens, thus organic acids acquired importance as a result of their excellent nutritional content and antibacterial benefits by reducing colonization of pathogenic bacteria and involvement in digestive processes like nutrient digestion and absorption.

During the last 5 years on the veterinary pharmaceutical market in the Republic of Moldova appeared different types of organic acids for chickens, which can be administered through water or feed. Nowadays broiler chicken's farmers have the option to replace antibiotics, which was the only way to control bacterial infections in chickens, with alternatives like acidifiers. Also because of the increased demand for antibiotic free