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Prylipko Tetiana
Doctor of Agricultural Sciences, Professor
State Agrarian and Engineering University in Podilya
Bukalova Natalia
Associate Professor
Bogatko Nadiya
Associate Professor
National Agrarian Universityin Bila Tserkva

IMPROVEMENT OF HORIZONTAL METHOD OF MILK TEST FOR *LISTERIA MONOCYTOGENES*

EU Member States are obliged to apply the microbiological criteria highlighted in Commission Regulations (*EC*) number 2073/2005. In this document pathogens are directly connected with the type of food product. These pathogens may be present in other types of food products (for example, *in bacillus cereus*). Besides, there are certain pathogens that are not regulated by *EU* legislative system (for example, *Campylobacter, Clostridium perfringens*). In such cases, *EU* Member States can adopt the national legislation or guidelines that regulate food production at the national level. There are specific requirements for the microbiological criteria for food safety that can only be used within domestic marketing Ukraine. However, these criteria cannot be used in terms of exporting the food products to the *EU* market [2, 4].

For the most of the criteria a certain type of food is specified. This does not concern *Listeria monocytogenes* that can be connected with almost all ready-to-serve products. *Listeria monocytogenes* is a pathogen that is well tolerated with food and can cause human diseases. *Listeria monocytogenes* is often met in the environment such as soil, vegetation and animal excrements. The widespread distribution and increased in comparison with other

organisms ability to grow or survive in refrigerated environments does *Listeria monocytogenes* a significant risk factor in the production of food products, especially it concerns ready-to-use food that is not treated in the process of production, as well as food that may be contaminated through the environment, including the production environment, in the process of its producing.

If necessary, the food market operators, responsible for food production, are obliged to monitor the criteria of safety during the product shelf life. In particular, it concerns ready-made meals that are able to maintain the growth of *Listeria monocytogenes*, which, in its turn, may become peril to the public health. The following guidance [1, 3, 5] were developed to help the representatives of food industry to make researchers on the ability to maintain the growth of the pathogen.

The central referent laboratory for research of *Listeria* has developed guidelines for the investigation of finished food products on their contents [1] for food products, able to support the growth of *Listeria monocytogenes*. The quantity of *Listeria monocytogenes* should not exceed 100 cfu/g by date of the expire.

The basis of the horizontal method for the *Listeria monocytogenes* detection in milk and dairy is developing the strategies for improving the horizontal method of *Listeria monocytogenes* detection in milk and dairy products with the help of research suspension, prepared in the ratio of 1:5 (samples of milk and dairy products in the amount of 10−11 cm^3 (*d*) and 50−55 $cm^3$of initial selective enriched medium(half of Fraser broth), and further incubation of the suspension for 21−23 hours at temperature of 31±1 °C and secondary enrichment. After the first initial enrichment the received culture in the amount of 0.05−0.06 cm^3 is transferred into the test tube that contains 5−6 cm^3 of second time enriched medium (Fraser broth). Then the environment with crops is incubated for 46−48 hours at the temperature of 37 °C. After that the primary (5−6 cm^3) and the secondary (2,5−30 cm^3) enriched culture in terms of selective environment *PALKAM*-agaris in oculatedandis carried out to get clearly separated colonies of *Listeria monocytogenes* for 24±2 hours at the temperature of 37±1 °C in the form of small green grey or olive green colonies, 1.5–2 mm in diameter, sometimes with a black halo, in 48 hours they are in the form of green colonies, 1.5–2 mm in diameter with deeply sunk center and a black halo around.

The results of our research showed that *Listeria monocytogenes* colonies were found in 24±2 hours. They were of small size about 1.5–2.0 mm in diameter of grey-green or olive-green color, sometimes with a black halo. In 46±2 hours they were of green color with deeply sunk centre and a black halo in the following samples of milk and dairy products (3 samples of raw milk and melted cheese; in 2 samples of cream, melted cheese and butter cream; 1 sample of cheese and spread). Specific colonies of *Listeria monocytogenes* were not founding samples of milk and pasteurized cream. The facts were steady and reliable, therefore, these indicators can be used in evaluating the safety of milk and dairy products. In addition, it should be noted that the method is economic, simple in execution, but its results give specific quality indicators in terms of color and size of *Listeria monocytogenes* colonies.

A method wepropose is a qualitative technique of improving the horizontal method of *Listeria monocytogenes* detection in milk and dairy products along with other methods of determining dairy products safety (determination of the total number of microorganisms) and determining the bacteria of intestinal stick group, salmonella and staphylococci) [5].

The advantage of this method among existing qualitative techniques is determining the

safety of milk and dairy products on the basis of reliable coloring and size indicators of *Listeria monocytogenes* colonies.

The obtained results were steady and reliable, so these indices can be used in monitoring the safety of milk and dairy products. In addition, the techniques we applied in our research are simple-to-use, economical and their results give definable quality indicators.

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