Biotesting method for assessing changes in the quality of goat milk during pasteurization

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In recent years, there has been a tendency towards an increase in the number and capacity of farms engaged in breeding goats. Moreover, this is due not only to the economic effect, but also to a new assessment of the nutritional value of goat milk, which has unique metabolic and physiological characteristics. In addition, goat milk has a powerful antioxidant system, which determines its therapeutic and prophylactic properties.

Since milk is a perishable product in the dairy industry, heat treatment is an obligatory technological operation in the production of all dairy and milk-containing products - mainly pasteurization and sterilization. However, heat treatment of milk leads to changes in its components, and, accordingly, the biological value and antioxidant activity.

Therefore, an adequate, accessible for mass use and express method for testing milk and dairy products is necessary, informative in determining the suitability of milk for obtaining fermented milk products for therapeutic and prophylactic purposes. The most acceptable at present is the use of test biosystems for these purposes, which are distinguished by high sensitivity, low cost of work, and, most importantly, providing an integral assessment of the object under study.

In this regard, the purpose of this work is to study the change in the quality of goat milk during pasteurization by the biotesting method.

The subject of the study was the quality of goat milk under various heat treatment modes (65 ° C for 30 minutes; 76ºС for 5 minutes; 90ºС for 20 seconds; 95ºС for 5 minutes) and its effect on the stress resistance of Paramecium caudatum ciliates. In the work, the ciliates were cultivated for 3 days on the Lozin-Lozinsky medium with the addition of goat milk samples processed under various pasteurization modes. On the 3rd day, the stress resistance of the test object was determined. The time of paramecium immobilization under the influence of a stressor - 1.5% hydrogen peroxide - was recorded as the main parameter of the study.

According to our research: 1. The high sensitivity of the selected test-object to changes in the antioxidant properties of goat milk processed under various pasteurization modes has been established; 2. It was shown that the stress resistance of the ciliates Paramecium caudatum increased when native goat milk was added to the nutritional mixture compared to the control; 3. The identified modes of heat treatment were revealed that ensure the greatest preservation of the antioxidant activity of goat's milk and, accordingly, a higher stress resistance of the ciliates Paramecium caudatum: 76ºС for 5 minutes and 90ºС for 20 seconds.

References

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