

EFFECTIVENESS OF JOGHURT FERMENTATION FROM MILK WITH VARIOUS CONTENT OF STREPTOMYCIN

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Raw material for the production of sour milk drinks (milk from cows) coming from small farms and dairy farms may contain antimicrobials (antibiotics), which in turn negatively affects the technology of making yoghurts, which must contain live microorganisms. The compound of antimicrobial drugs that are used to treat dairy cows includes streptomycin [4, 5]. However, in the available literature there is no clear data on the concentration of streptomycin in milk, leaven microorganisms of yogurt are inactivated.

For the treatment of inflammatory processes of the mammary gland of cows, drugs containing antibiotics are used. In addition, similar drugs are used and with a prophylactic purpose in the intercalation period [6-10]. In the fight against mastitis drugs of wide and narrow spectrum of action are used [11, 12].

Inserting in the udder of antibiotics including streptomycin in significant concentrations passes into milk. Such milk is not suitable for human consumption and the manufacture of sour milk products.

Therefore, the purpose of the study was to determine the effects of different doses of streptomycin in milk of cows on the process of its fermentation for the action of microorganisms leaven for yogurt.

For the research 12 variants, which one is control and 11 experimental ones were prepared. The milk used for research has a mass fraction of fat 3.4% and acidity 17.5 °T.

For the experiment, milk samples were measured at 150.0 cm³. The composition of the yeast for yogurt included: *Streptococcus thermophilus*, *Lactobacillus delbrueckii* ssp. *Bulgaricus*, *Lactobacillus acidophilus* and *Bifidobacterium lactis*. Steroids of streptomycin sulfate (720 OD in 1 mg) were used as deactivators of growth, reproduction and metabolism of lactic acid microorganisms. The antibiotic (1.0 g) was dissolved in 100 cc of distilled water.

In the control variant, milk did not contain streptomycin. In the first experimental version, milk (150 cm³) contained 0.1 cm³ of streptomycin solution. The active substance content of the antibiotic was 4.8 OD / cm³ of milk.

Milk samples from the 2nd, 3rd and 4th experimental variants contained, respectively 9, 6; 14, 4 and 19, 2 units of active substance of an antibiotic in one cm³. Milk from V, VI, VII and VIII variants was introduced, respectively, by 24.0; 28.8; 33.6 and 38.4 OD of streptomycin per cm³. In samples from the IX, X and XI trial variants, there were 43.2; 48.0 and 52.8 units of streptomycin active substance.

Fermentation was carried out by thermostatic method. The temperature in the thermostat was maintained at 36.0 °C. The time for souring was 12 hours.

Experimentally it was found that in the control variant, where streptomycin was not added to milk, yogurt had a homogeneous well-formed clot. Viscosity of the product was satisfactory. In the yoghurt of the control variant no other flavors were found. The taste was natural sour milk. Addition of streptomycin 4.8 OD / cm³ of milk did not significantly affect the organoleptic characteristics of yogurt. By consistency, appearance and taste, the product did not differ much from the control variant.

By the content of the active substance streptomycin in milk 9, 6 OD / cm³, the clot of yogurt was liquid and unformed, serum separation was detected. Taste was weakly expressed in lactic acid. The presence of antibiotic in milk in the third experimental version (14.4 OD / cm³) led to the fact that the final product had a very liquid clot with an active serum separation. The taste was similar to the hot milk. Increasing the content of streptomycin in milk to 19.2 OD / cm³ negatively affected on the leaven microorganisms, resulting in the final product corresponded to a white, slightly tiring liquid with a slightly bitter taste of milk.

The final product in V-IX experimental variants was liquid, homogeneous, non-transparent and had a taste of stale milk. The usage of the largest dose of streptomycin (52.8 OD / cm³) in the XI experimental version, the taste of the final product resembled fresh milk.

The average titrated acidity of milk at the beginning of the experiment was 17.5 °T. In the control variant, acidity of yogurt was at 90.3 °T.

The use of streptomycin in the amount of 4.8 OD / cm³ of milk led to a decrease of titrated acidity of the finished product by 5.5% compared with control. The presence of milk in the second experimental variant of the antibiotic was accompanied by a decrease in titrated acidity of yogurt by 24.1%.

As the content of streptomycin in milk is increased up to 14.4 OD / cm³, titratable acidity decreases 1.99 times relative to the control variant. As the antibiotic content increases in the raw material, the titratable acidity of the finished product is reduced. In V-VII experimental variants (dose of antibiotic from 24.0 to 38.4 OD / cm³ of milk) titrated acidity of the final product corresponded to sour milk. The

application of the largest dose of streptomycin in the XI trial led to the rapid decontamination of the yeast microorganisms for yogurt, resulting in a titrated acidity of the final product increased by 9.1% compared with the acidity of fresh milk at the beginning of the experiment.

Consequently, the presence of streptomycin in milk negatively affects on the leaven microorganisms of yogurt. In the presence of an antibiotic above 9,6 OD / cm³ in milk, it is not possible to make high-quality yogurt.

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