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VIABILITY OF STREPTOMYCES STRAINS AND ITS VARIANTS AFTER FREEZE-DRYING IN CNMN

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There are currently more than 20 types of strain preservation methods, which can be divided into four categories: subculturing, drying, freeze-drying, and cryopreservation.

All modern methods of preservation and long-term storage of microorganism collection cultures are based on the transfer of cells to an anabiotic state with an appropriate partial state (storage on medium with minimal necessity of nutrients, in sterile vessels, under a layer of mineral oil, in distilled water, at low temperatures, etc.) or complete (drying, freeze-drying, cryopreservation, etc.) cessation of metabolism. Each of the methods has its own advantages and disadvantages and can have a different effect not only on the viability, but also on the preservation of the characteristic properties and physiological, biochemical, and genetic features of the culture. In connection with the need to develop integrated approaches to the conservation of microorganisms, it is important to note that the practice of conservation, which has developed over many decades, has empirically developed a number of examples which, to one degree or another, correspond to those mechanisms. Immersion of cells of microorganisms in an anabiotic state which have been identified (and continue to be detected) in the study of the formation, properties and germination of specialized resting cells of microorganisms.

Thus, freeze-drying of microbial strains is one of the most sustainable methods, but it requires the greatest manpower, special equipment and trained personnel. Thus, the purpose of the research was to evaluate the viability of *Streptomyces* strains maintained in the National Collection of Non-Pathogenic Microorganisms (CNMN) after freeze-drying to determine the effectiveness of the method.

The basic strains and their variants served as objects of study: *Streptomyces levoris* (CNMN-Ac-01, CNMN-Ac-15, CNMN-Ac-16); *S. mauvecolor* (CNMN-Ac-12, CNMN-Ac-17, CNMN-Ac-18); *S. gougerotii* (CNMN-Ac-14, CNMN-Ac-19, CNMN-Ac-20).

For the long-term preservation of lyophilized *Streptomyces* strains, protective medium gelatin 2.5 % + glucose 7.5 % was used. The contents of the vials with sporulating material was frozen at -50°C. Freeze-drying taken place for 8 hours, at the Labconco 6 plus freeze-drying machine at a pressure of 6-7 Pa and a temperature of -94°C. The determination of the viable germ load by inoculation on solid culture media, the cells that cause colony formation are called colony forming units and their number is approximately equal to the number of microbial cells in the sample. According to results the viability of all 9 strains after freeze-drying varying between 88.7 – 97.8 %. Freeze-drying was successful, because the viability of the strains was higher than 85.0 %.

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