

**STREPTOMYCES FRADIAE CNMN-Ac-11 AFTER STORAGE BY SUBCULTURING AND CULTIVATION ON COMPLEX MEDIA**

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Actinobacteria of the genus *Streptomyces* are known as producers of antibiotics, enzymes, hormones, vitamins, antipsychotics, antitumor agents, vaccines for humans and animals, growth stimulants and other substances that are used in medicine, veterinary medicine, agriculture and many other fields.

In recent years, studies have been focused on increasing the production of bioactive metabolites of promising streptomycete strains via optimization of the cultivation conditions.

The aim of the study was to determine the composition of lipids in the biomass of the *Streptomyces fradiae* CNMN-Ac-11 strain after cultivation on complex media after long-term storage by subculturing.

It was found that when this strain was cultivated on the M-I medium, the biomass yield was 6.09 g/l. On the SP-I medium with the addition of 3.0 g of  $K_2HPO_4$  (SP-III), the biomass yield increased to 9.61 g/l. The percentage of total lipids in the biomass of the *Streptomyces fradiae* CNMN-Ac-11 strain on the SP-I medium was 19.52%, and on the M-I and SP-III media – 8.76% and 12.76% respectively.

Analysis of the studies in the past showed that the long-term storage could affect the formation of biomass and total lipids during the cultivation of the *Streptomyces fradiae* CNMN-Ac-11 strain on the M-I complex medium. Thus, according to the results in 2015, the biomass yield was 14.15 g/l, which is significantly higher than 6.09 g/l obtained in 2019. The proportion of total lipids in the biomass during the cultivation of the *Streptomyces fradiae* CNMN-Ac-11 strain was 12.11% in 2015, and 8.76% in 2019.

After the long-term storage by subculturing, the cultivation of the *Streptomyces massaporeus* CNMN-Ac-06 strain on the M-I medium increased the biomass yield to 7.18 g/l, and the *Streptomyces fradiae* CNMN-Ac-11 strain – to 6.09 g/l. Regarding the accumulation of total lipids, it was noted that the best result was shown by the *Streptomyces fradiae* CNMN-Ac-11 strain (8.76%), in contrast to the *Streptomyces massaporeus* CNMN-Ac-06 strain (4.96%).

It was also found that after the storage by periodic transfers and cultivation on the M-I complex medium, there was a decrease in phospholipids (4.31%) and triglycerides (13.55%) that occurred simultaneously with an increase in sterols (12.97%), which was probably due to the changes in the medium composition, where corn flour was the main source of carbon, as well as due to the high heterogeneity and individual characteristics of streptomycetes.

It was experimentally shown that to increase the biomass yield the *Streptomyces fradiae* CNMN-Ac-11 strain better be cultivated on the complex media SP-I and SP-III, which also contribute to increases in the lipid content of the biomass, and, most importantly, to increases in such physiologically active lipid fractions as phospholipids and sterols.

Thus, the perspective of the *Streptomyces fradiae* CNMN-Ac-11 strain was demonstrated. When grown on complex nutrient media the strain can accumulate enough biomass with high content of lipids, including such physiologically important fractions as phospholipids and sterols.

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