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Optimization of Microorganisms Storage Methods by Pin-sorption Method on a Sorbent

Key words: *strains, sorbents, microorganisms, biochemical activity.*

Annotation: *The article presents the results of the optimization methods of storing microorganisms contact-sorption method on sorbents, as well as the results of the biochemical activity of the studied crops.*

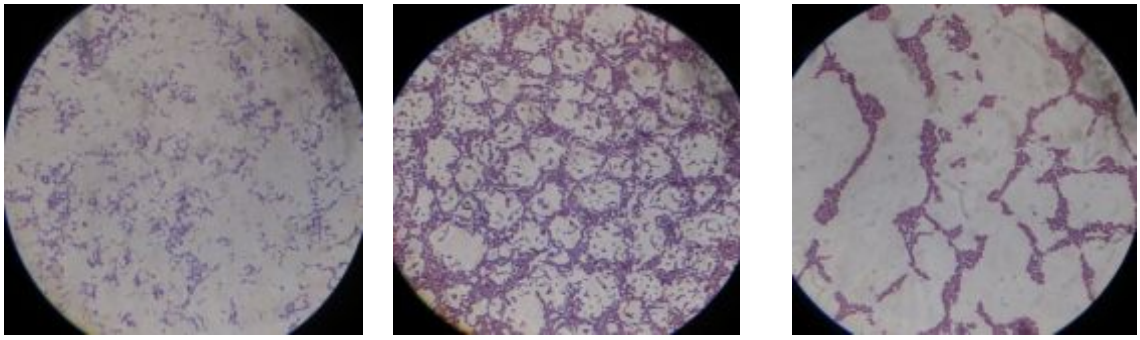
The studies were conducted with 40 collection strains of microorganisms of different taxonomic groups pledged on different adsorbents belonging to members of prokaryotic cells and eukarioticheki: group bacteria of the genus Bacillus (10 cultures); group of bacteria (10 cultures); IBC (10 cultures); yeast (10 cultures).

We used the method of contact-sorption dehydration (CSR) for storing collection cultures. The essence of the method consists in the dehydration of CSR microorganisms upon contact with moisture adsorbent, whereby bacteria lose water and metabolic processes are slowed dramatically. As used sorbents carriers of domestic and foreign production: Adsorbiks, Altai sorbent and sorbent Tagan.

Study of the biochemical activity of the strips was performed using API test 20 to 20A, identifying 55 taxa manufactured by bioMérieux, France, which are intended for biochemical

identification of lactobacilli. Biochemical identification was carried out on bacteriological analyzer using maps GP, GN, BCL, YST. For identification of Use clean, fresh culture, diluted in 3.0 cm3 0.45-0.50% aqueous solution of NaCl. The density of the culture was 0,50-0,63 McFarland, which was measured using a calibrated densitometer Vitek 2 DENSICHEK.

Figure 1 shows the morphological and tinctorial characteristics of strain *Lactococcus* PKM 0001 after reactivation with adsorbents.



Subculture Tagan sorbent Altai sorbent

Figure 1 - The morphological and tinctorial characteristics of strain *Lactococcus* PKM 0001 with the subculture and after reactivation with adsorbents

Morphological and tinctorial characteristics of strain Lactococcus PKM 0001, seeded with adsorbents significantly improved compared with traditional morphology subcultures. When planting crops after storage Adsorbiks, there is a lack of bacterial growth, indicating that the negative impact of the sorbent lactic acid bacteria. Quantitative evaluation of the effectiveness of the storage collection of microorganisms of different taxonomic groups of contact-sorption dehydration using Tagan, Altai sorbents and Adsorbiksa 8 months later reflected in Figure 2.

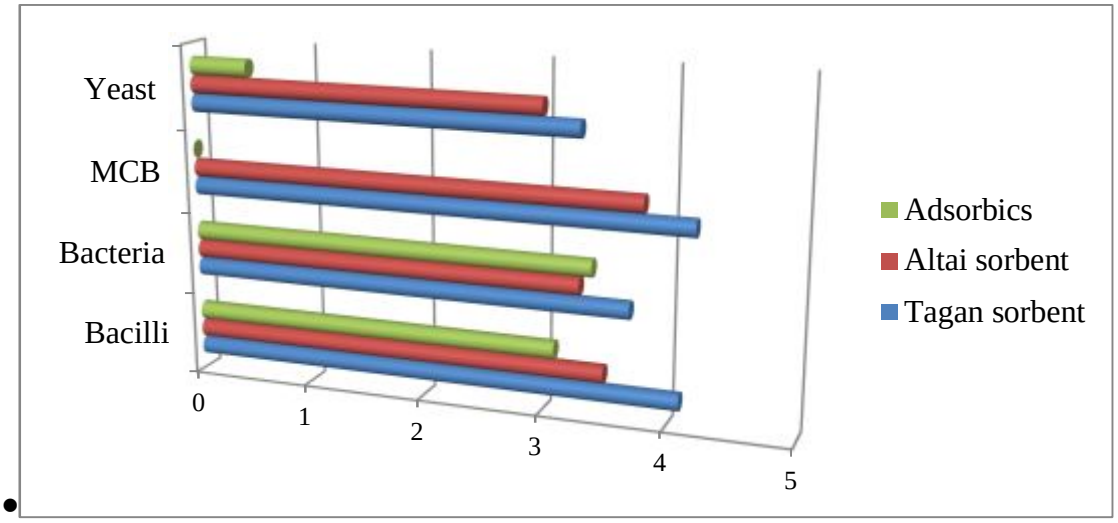


Figure 2 - Growth of cultures after storage adsorbents after 8 months of storage

To study the biochemical activity of collection cultures pledged to hold CSR adsorbents Altai, Tagan and Adsorbiks, we were to compare lactobacillus and subcultures of the same strains. Study of biochemical activity was performed using the standard API 20A strips 20 tests. The results of biochemical activity are shown in Figure 3.

Figure 3 - Comparative biochemical activity of *Lactobacillus* brevis 3-9 RKM 0010 after 8 months of storage subculture and Tugun, Altai, Adsorbiks

The results of the study of fermentation 20 biochemical tests showed complete agreement between the results of CSR Altai and Tagan sorbent and subcultures, CSR sorbent Adsorbiks led to a reduction of biochemical activity in 7 carbohydrates compared subculture. Comparative biochemical activity after 8 months of storage on sorbents Tagan, Altai showed a high accuracy of identification, to an average of 97% and 88% for Adsorbiks. The results of the study of fermentation 64 biochemical tests showed complete agreement between the results of CSR Tagan and Altai sorbents and subculture. The results indicate that the best accuracy of the biochemical identification of cultures after 8 months of storage were on sorbents Altai and Tagan sorbent.

The study found that it is preferable to use as sacrificial protection with minimum CSR adsorbents because they slow down the metabolism of microorganisms due to dehydration and therefore the intervals between subcultures and terms of subcultures on adsorbents longer.

In addition, we choose the most optimal ratio of adsorbent/suspentsiya to absorb fluid and dehydration microorganisms. This relation is as follows: 200 mg of the adsorbent per 500 l of the suspension.

We found that the CSR has technological advantages, the minimum software tool as well as gentle drying mode as compared with lyophilization, thereby providing preservation of basic biological properties of microorganisms and their ultrastructure.