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**ANTIADHESIVE ACTIVITY OF ACINETOBACTER CALCOACETICUS IMV B-7241
SURFACTANTS DEPENDING ON MONOVALENT CATIONS CONTENT
IN CULTIVATION MEDIUM**

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Relevance. Biosurfactants are multifunctional preparations due to a combination of physicochemical and biological properties. However, the disadvantage of biosurfactants synthesized as a complex of compounds is the possibility of changing the biological activity depending on the conditions of cultivation of the producer [1].

Aim: researching the effect of potassium and sodium cations on antimicrobial and anti-adhesive activity of surfactant synthesized.

Materials and methods. Strain IMV B - 7241 was grown in media containing 2% used sunflower oil as a carbon source, as well as various concentrations NaCl and KCl (basal – 1.0 NaCl g/l, medium 1 – without NaCl, Medium 2 - 2.0 g/l NaCl, Medium 3 - 1.0 g/l NaCl and KCl of each). The surfactants were extracted from the supernatant liquid with a modified Folch mixture. Anti-adhesive activity and the degree of degradation of biofilms were determined by spectrophotometric method, antimicrobial activity – by the indicator of the minimum inhibitory concentration (MIC) [2].

Results and its discussion. The concentration of surfactants synthesized on the basal medium was 3.6 g/l, but such surfactants were characterized by the highest antimicrobial and anti-adhesive activity. Their minimum inhibitory concentrations against the test-cultures of studied bacteria (*Pseudomonas sp.* MI-2, *Bacillus subtilis* BT-2, *Escherichia coli* IEM-1, *Staphylococcus aureus* BMS-1, *Enterobacter cloacae* C-8) and fungi (*Candida albicans* D-6, *Rhizopus nigricans* P1, *Aspergillus niger* P-3, *Fusarium culmorum* T-7) were 0.88–56 µg / ml and were by 2–3 orders of magnitude lower compared to those set for surfactants synthesized on modified media 1-3. In the case of treatment of abiotic materials with surfactant solutions obtained on the basal medium, the adhesion of bacteria and fungi was on average 10-20% lower than after surface treatment by the synthesized on modified surfactant media. In the presence of 148–296 µg / ml of surfactants obtained on the basal medium, the degree of destruction of biofilms *S. aureus* BMS-1 and *B. subtilis* BT-2 was 45–66, and yeast *C. albicans* D-6 - 39–44%. Under the action of similar concentrations of surfactants synthesized on modified media, the destruction of bacterial and yeast biofilms was lower: 6-52 and 20-46%, respectively.

Conclusions. The obtained results are consistent with the data of our previous studies on the possibility of regulating the antimicrobial and anti-adhesive activity of surfactants in the process of cultivation of the producer by changing the content of cations in the medium, which are inhibitors/activators of enzymes responsible for the synthesis of components of the surfactant complex, which have certain biological properties.