IMMOBILIZATION OF LYSOZYME IN POLYVINYL ALCOHOL CRYOGEL


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The lysozyme immobilization in cryogel of polyvinyl alcohol and physico-chemical properties of obtained preparation was investigated. Hydrolytic activity of lysozyme was determined by bacteriolytic method, using Micrococcus lysodeikticus cells acetone powder as substrate. Protein content was determined by the Lowry–Hartree method. Immobilization of lysozyme was conducted by entrapment in polyvinyl alcohol gel with subsequent cycles of freezing-thawing. Antimicrobial activity was studied by standard disk-diffusional method. The hydrogel filmic coatings with antimicrobial action, insoluble at physiological conditions, with quantitative retaining of protein and hydrolytic activity of lysozyme were obtained. The product is characterized by the widened pH-profile of activity at acidic pH values, stability in acidic medium (pH 5.5) and at storage. Its antimicrobial action against Staphylococcus aureus ATCC 25923 F-49, Pseudomonas aeruginosa 415, Escherichia coli 055 K 59912/4 and Candida albicans ATCC 885-653 was noted. The proposed method of lysozyme immobilization allows to obtain stable, highly effective product with antimicrobial activity, prospective for usage in biomedical investigations.

**Key words**: lysozyme, cryogel of polyvinyl alcohol, hydrogel coatings, antimicrobial action.

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