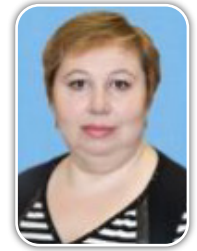


## Pharmaceutical development of a wound healing biopreparation in the form of a gel

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### Abstract

Pharmaceutical development includes the study of composition, technology, stability, standardization and specific activity. The purpose of our research is developing a wound-healing biological product in a gel form. The active ingredient is Bactisporin. It is a biomass of an antagonistically active strain of bacteria *Bacillus subtilis* 3H that has antimicrobial activity against dermatophyte fungi, or *Bacillus subtilis* 11B isolated from natural material that suppresses a wide range of conditionally pathogenic, pathogenic bacteria and fungi. Collagen solutions with high thickening and swelling capacity in combination with acetic acid maintain normal pH at the site of inflammation, restore metabolic processes, slow down the activity of microorganisms and create favorable conditions for wound healing. For technological research, well-known gelators (CEKOL, CARBOPOL, styrene copolymer with maleic anhydride and acetic-acid collagen solution) were used. Experimentally based formulations with bactisporin were combined with auxiliary substances (dimethylsulfoxide, glycerine and preservatives) to ensure physical, technological and microbiological stability, also to improve visco-plastic and adhesive properties of gels. Stable compositions were selected during storage. The antimicrobial effect of experimental compositions on pathogenic and conditionally pathogenic bacteria is determined in accordance with the state Pharmacopoeia. Moreover, the activity of the gel with bactisporin against *St. aureus*, *Proteus*, *Candida albicans* test strains was revealed. Experimental burn wounds in white rats were used to study the wound-healing activity of gel in comparison with Laevomecolum (Russia). Wound healing time in rats when using a wound-healing biopreparation is significantly shorter than in the comparison group and in the control group. The compositions of gels with bactisporin are stable physically, technologically and microbiologically. This gel is stable during storage, easy to apply, does not violate the gas exchange, easily releases the active principle. Thus, the composition and technology of a wound healing biopreparation in the form of a gel were developed.

### Biography

Gulnara Ayupova has completed her PhD at the age of 26 years from Bashkir State Medical Institution, USSR. She is the associated professor at the department of pharmacy, Bashkir State Medical University, Russia. Currently, she is working at the department of pharmacy as a head of academic work, BSMU. She has over 150 publications and educational and methodical works in the central and local press, including 8 patents; her H-index is 3.

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