

## Properties of ghost bacterial cells obtained by hybrid material with silver nanoparticles (PVA/AgNps) as well as their opportunities for use in vaccine prophylactics

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PVA/AgNps is hybrid material with thermally reduced silver nanoparticles, stabilized in polyvinyl-alcohol. It is well characterized with experimental results from physico-chemical, microbiological and cytological tests. In vivo experiments in dermal cytotoxicity test and subcutaneous injections on white mouse showed PVA/AgNps as a non-toxic in the enclosed silver concentration. It was conducted an experiment to implement it as an inactivator of a bacterial strain *E. coli* O 104 for the preparation of antigen for immunization of rabbits. It has been used also for preservative of the obtained in consequence of immunization hyperimmune *E. coli* O104 rabbit antiserum. It has been successfully used in clinical trials as a treatment agent for cough and recurrent otitis in dogs. The activity of PVA / AgNps was tested to nearly 150 bacterial and fungal strains. The MBC of synthesized samples of the hybrid material are determined also for *E. coli* O 149, *E. coli* O 157 H7 and *S. Typhimurium*, which are established as common pathogens in farm animals with huge losses for animal farming. As a result of all the in vitro and in vivo tests, the hybrid material was characterized as a non-toxic product with a bactericidal and fungicidal action to control and clinical strains of bacteria and yeast in the established tests limits, with excellent prospects to be used as a preservative for diagnostic serums and as an inactivator for obtaining of ghost cells with capacity for application as whole cell killed vaccines, and theoretical perspectives in the preparation of recombinant vaccines.

### Biography

Daniela Pencheva graduated with Masters Degree from the Biological Faculty of Sofia University "St. Kliment Ohridski", Bulgaria. 33 years old she completed Postgraduate Microbiology at the "Medical University", Sofia, Bulgaria. In 2012, she defended PhD degree in "NCIPD", Sofia, Bulgaria. She is Head of laboratory in QC Department in "Bul Bio - NCIPD" Ltd. Sofia, Bulgaria. Until now has 9 published papers in reputed journals and 25 poster presentations and proceedings in Bulgarian and international congresses and conferences. She participate in a training process and is research consultant of students and young scientists with interest in microbiology and biomedicine.

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