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### Pyrogen free bacteriophage lysates - New approach

Bacteriophages are powerful tools in biotechnology and they have great potential for bacterial infection treatment. Crude bacteriophage lysates, amplified on gram-negative bacteria, include lipopolysaccharides (LPS). LPS (pyrogen, endotoxin) is a constituent of gram-negative bacteria outer membrane, it act as strong stimulator of immune system and can cause uncontrolled activation with production of inflammatory mediators that may lead to septic shock. Therefore bacteriophages as a potential drug should be pyrogen free. We present a procedure for extractive removal of endotoxin from bacteriophage preparations with water immiscible solvents. During the extraction, the anti-bacterial lytic activity of the bacteriophages is retained. The levels of endotoxin in the bacteriophage fraction, determined by limulus amebocyte lysate test, are extremely low reaching out to a few endotoxin units (EU). For example, bacteriophage T4 endotoxin level prior to purification - 8700 EU/ml and after purification - 5 EU/ml. The key step in the procedure is extraction which can be supported by membrane filtration. Dialysis membranes are used to get rid of the residues accompanying bacterial lysis. Dynamic light scattering analysis has pointed a monodispersive character of the obtained bacteriophages. The presented method for endotoxin removal is scalable and has the potential to be used in the laboratory and in industrial conditions.

#### **Biography**

Bożena Szermer Olearnik has completed her PhD in the Ludwik Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences. She works in the Laboratory of Biomedical Chemistry which is a part of the NeoLek - Integrated Laboratory of Experimental Oncology and Innovative Technologies. She has published four original papers and is a co-author of scientific monographs. She has contributed in two patents.

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