

## II. Symposium of Young Researchers on Pharmaceutical Technology, Biotechnology and Regulatory Science

January 23-24<sup>th</sup> 2020. Szeged, Hungary

**OP-37**

DOI: 10.14232/syrptbrs.2020.op37

### **PEGylation and formulation strategies of antimicrobial peptides and proteins development**

Reihaneh Manteghi<sup>1</sup>, Gerda Szakonyi<sup>2</sup>, Ildikó Csóka<sup>1</sup>

<sup>1</sup>Institute of Pharmaceutical Technology and Regulatory Affairs, University of Szeged Hungary

<sup>2</sup>Institute of Pharmaceutical Analysis, University of Szeged, Hungary

The potential of antimicrobial peptide and protein agents has yet to be concerned owing to the many unresolved problems including low bioavailability, high manufacturing cost and toxicity concerning their delivery to the target site [1].

Novel chemical modification approaches as well as strategies for delivery of proteins and peptides offer several opportunities to overcome these barriers. However, these approaches hide several risks. This study presents a Quality by Design (QbD) based peptide and protein modification and formulation design. Analyses the potential risks in the peptide PEGylation process through the example of PGLa and on the other hand, the effective delivery of proteins with antimicrobial activity was accomplished through the example of lysozyme in a novel formulation strategy as layer-by-layer polyelectrolyte core-shell nanoparticle [2]. The precipitation method was applied for the formulation of core and the second step was the layering of polymers according to the factorial design. The particle size, zeta potential and enzyme activity were the optimization parameters.

#### References:

1. Marr A. et al. Curr. Opin. Pharmacol. 6, 468–472(2006)
2. Kristó K. et al. Int. J. Pharmaceut. DOI: 10.1016/j.ijpharm.2019.118825 (2019)

*Supervisor(s): Dr. Ildikó Csóka, Dr. Gerda Szakonyi*