

**Institute of Pharmaceutical Technology and  
Regulatory Affairs  
Faculty of Pharmacy  
University of Szeged**

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

**Szeged, Hungary**



**31<sup>th</sup> January  
2019**



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**OP-18**

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## **Quality by Design driven development of Liraglutide loaded nanocarrier system designed for oral delivery**

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Since Liraglutide, a fatty acid modified glucagon like peptide -1 (GLP1) analog, is still administered parenterally, this work aims at designing and optimizing Liraglutide encapsulated in polymeric nanoparticles for oral administration implementing Quality by Design (QbD) concept from the early stage of development.

Risk assessment based study was successfully conducted followed by selecting the critical process parameters (CPPs) and critical material attributes (CMAs) with the highest risk to be further investigated applying screening design of experiment (DOE). Plackett Burman DOE was successfully implemented to understand and evaluate the effect of CPPs and CMAs on the size, encapsulation efficiency, polydispersity index and zeta potential of Liraglutide loaded polymeric NPs. The design space was established and the optimized formula was prepared and examined for physicochemical properties, compatibility, structural stability and in vitro release behaviour.

This work presents the potential of implementing the QbD methodology when designing such a complex system to ensure high quality of the final product.

### References

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