



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

January 19-21, 2022 - Szeged, Hungary

DOI: [10.14232/syrptbrs.2022.23](https://doi.org/10.14232/syrptbrs.2022.23)

### Formulation and investigation of the effect of polymers on dermal foam properties using the QbD approach

Fanni Falusi, Anita Kovács, Szilvia Berkó

University of Szeged, Faculty of Pharmacy, Institute of Pharmaceutical Technology and Regulatory Affairs, Szeged, Hungary



Dermal foams are promising drug delivery systems due to their advantages and ease of application. In particular, they are beneficial for the treatment of skin conditions where patients have highly inflamed, swollen, infected and sensitive skin, as the application of the foam minimizes the need for skin contact [1].

My research aimed to develop stable foam formulations containing different types of polymers, to determine the proper methods to investigate their physicochemical and structural properties, and to compare the results of different methods. To ensure quality-based development, the QbD approach was applied. With initial risk assessment, the critical material attributes (CMAs) and the critical process parameters (CPPs) were identified to ensure the required critical quality attributes (CQAs).

The testing methods include the study of foam expansion, foam stability, foam density, foam structure by macroscopic, microscopic, rheological and texture analyzing methods. Through the determination of macroscopic properties, information on the stability of foam formulations can be acquired. With a light microscope, the stability of foams, as well as the kinetics of the destabilization mechanism was analyzed. Rheological measurements could detect deformations in the structure of the foam due to different forces. The dermal application of foam could be modeled with a texture analyzer.

Based on the results, the methods reinforced each other and can be used in preformulation studies to select the optimal formulation.

#### References

[1] Parsa et al., Foam in pharmaceutical and medical applications, Current Opinion in Colloid&Interface Science, 2019