OP-06

DOI: 10.14232/syrptbrs.2023.28

Influence of polymers and active substances on foam stability

Fanni Falusi, Szilvia Berkó, Anita Kovács

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

Foams are becoming increasingly attractive delivery systems in the field of dermatology due to their beneficial properties, such as easy spreading, pleasant skin sensation, and applicability in certain skin conditions.

Because of its applicability, the selection of proper stabilizing agents is a fundamental factor in the formulation of foams. One possible approach for enhancing stability is to delay the liquid drainage of liquid films from the foam structure, which can be accomplished by adding macromolecular polymers.

Examples of such polymers include xanthan gum, which is a widely used excipient in pharmaceutics. Hyaluronic acid is derived from natural sources and has moisturizing and water-retaining properties.

Our research aimed to investigate the effect of two popular polymers (xanthan gum and hyaluronic acid) as well as two potential dermatological active ingredients (dexpanthenol and niacinamide) on foam formation and foam stability.

Rheological amplitude sweep test, surface tension, microscopical investigations, and cylinder test were used to investigate foam formation. The stability of the foams was assessed using the rheological frequency sweep test and the spreadability test.

The addition of macromolecular polymers increased the stability of dermal foams. The rheological results were in correlation with the results of the spreadability and cylinder tests. Among the active substances, dexpanthenol promoted foam formation, while niacinamide had no measurable effect on foam structure. In conclusion, the combination of xanthan gum and dexpanthenol can be an ideal combination in terms of foam formation and stability.

Acknowledgements: This work was supported by the ÚNKP-22-3-SZTE-149 New National Excellence Program of the Ministry for Culture and Innovation from the source of the National Research, Development and Innovation Fund.