

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

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

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Examination of penetration through the skin by passive and active methods

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From the point of view of pharmaceutical technology, transdermal administration is an extraordinary challenge. Throughout the development of pharmaceutical technology, considerable attention has been focused on the delivery of active ingredients through the skin. However, the penetration is limited, which inhibits the optimal bioavailability of the formulations. The greatest barrier to drug entry is the stratum corneum [1]. With different technological tools like passive and active methods, the conditions of access can be optimized. Choosing the appropriate carrier systems can be a critical point in the development of the effects of the compositions. Drug carrier systems (hydrogel, oleogel, nanostructured lipid carrier, and lyotropic liquid crystal) were formulated. The effect of carrier systems was also studied in combination with electroporation. This treatment is an active method with high-voltage impulses which accelerate drug penetration through the skin [2]. Comparing the different carrier systems, the nanostructured lipid carrier was the best in both hydration and transepidermal water loss. In combination with electroporation treatment, the moisturizing effect of the carrier systems was significantly improved, which was the most successful in case of hydrogel.

The aim of further research was to detect the effect of electroporation with another method. Leica DM6 was applied to detect the penetration of label dextran of different molecular weight into different layers of the skin.

The film forming systems were a promising choice for dermal preparations [3]. Further aim of the study is the development of a formulation of a topical application.

References

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