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## TRANSDERMAL DRUG DELIVERY AS A NEW AND SAFE DIRECTION OF DRUG DELIVERY

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An unprecedented attack by Russian troops on Ukraine destroyed the world order. War always brings death and destruction. Due to the ongoing hostilities in Ukraine, many have changed their conditions and lifestyle, nutrition, the ability to follow the rules of personal hygiene, psycho-emotional state, and more. During this period, there was a significant increase in fungal diseases. Forced stay in bomb shelters, basements, and places of mass accumulation hurts health and contributes to the development of mycoses of the feet and fungal damage to the nail plates [1].

Transdermal drug delivery has many advantages over oral administration, primarily in avoiding systemic drug metabolism and its destruction in the digestive tract. And unlike injections, transdermal administration is painless, safe, and easy to use. Given the problem described above, the question of studying and researching transdermal drug delivery remains relevant. In the course of experimental research, a study of the technology of transdermal drug delivery systems based on microneedles in treating skin fungal infections using clotrimazole will be conducted. Microneedles allow you to inject drugs with minimal injury. Microneedles create small holes in the epidermis, through which the drug can penetrate the dermis, and from there into the systemic bloodstream. In the epidermis, unlike the dermis, there are no nerve endings, so the procedure of using microneedles is painless. The holes formed in the epidermal layer are tightened very quickly [2].

Solid microneedles, which are used mainly to prepare the skin for the application of drugs, will be used for experimental studies. They create numerous openings (pores) in the stratum corneum, through which the drugs applied to the skin penetrate the epidermis or directly into the dermis, as if through canals. This can achieve both local and systemic effects because in the dermis there are capillaries through which the drug can enter the systemic circulation [3].

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Conducting these studies is relevant and important and is possible through the cooperation of two universities in Poland and Ukraine.

### **References:**

- [1] Tkachenko T. Microneedles - a promising means of transdermal drug delivery (2020) Pharmacist-practitioner: popular science and estate magazine.
- [2] Abhinava Garga, Ganti S.Sharma, & Amit K.Goyal (2020) Recent advances in topical carriers of anti-fungal agents. Heliyon, Volume 6, Issue 8.
- [3] Vons, B. V., Chubka, M. B., & Hroshoyi, T. A. (2017). Transdermal systems of delivery of medicinal substances. Pharmaceutical Journal, (2), 106–112.