

## ***IX. Pharmacy Section***

### **1. ABSORPTION MECHANISMS OF SOFT PHARMACEUTICAL FORMS THROUGH THE SKIN**

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**Introduction.** Ensuring optimal therapeutic action in a soft pharmaceutical form depends heavily on selecting the vehicle and penetration potentiators, substances that facilitate their penetration through the skin layers. Human skin functions as an efficient barrier and protector when in impact with the environment. In order for medicinal products to reach the deep layers of the epidermis and dermis or the systemic circulation, they must be penetrated in the first stage.

**Aim of the study.** The study and the analysis of the factors that influence the absorption of topic medicamentary forms through the skin.

**Methods and materials.** Bibliographic sources were analyzed using PubMed, Pharmatech, Pharmaceutical-technology and others.

**Results.** Due to low permeability of the skin, only a small quantity of medicinal substances are truly absorbed, therefore only very active substances can have a general action after topic administration. The penetration of the medications in and through the skin can be realized in two ways: 1. through pores – the walls of the hair follicles (transfollicular) and less through the sweat glands; 2. transepidermal – crossing epidermis. One of the factors that influence the penetration of medications administered topically is the excipient or its basis used in formulation of the medicinal product, thus influencing the bioavailability and the pharmacological actions of the pharmaceutical form. Since the skin is considered a lipid membrane, results that liposoluble substances can penetrate the skin. The absorption of fat is very reduced and the penetration is favored to liposoluble substances, stratum corneum can be capable to absorb amphiphilic substances that can get to vascularized zones of the skin. Hydrophilic medications can penetrate the skin only if hydration is produced to the skin. The hydration occurs after applying fat bases or hydrocarbons that prevent evaporation, but at the same time a rise of the temperature is produced and a skin maceration. At the basis of O/W type of emulsion the mechanism is different, because a fast water evaporation happens from the emulsive system, making the ointment layer to become porous and allow the water from the skin to evaporate. Hydrogels do not produce hydration, but if in the formula are humectants like glycerine, there is a risk of skin dehydration. In dermatological treatments it is intended for the medication to penetrate the skin, but does not get to blood flow, even though this fact cannot be controlled in all cases.

**Conclusion.** A number of substances that increase medication absorption have been studied, which means temporary increase of skin's permeability, nevertheless, there are some restrictions on using them due to skin irritation or toxicity.