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In vitro study of topical use of cidofovir
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Abstract

Cidofovir (CDV), an antiviral drug belonging to the group of acyclic nucleoside phosphonates, is a highly potent drug used for treatment of various infections of viral origin. The low usage of CDV is caused by its price. This work deals with possibilities of increasing the concentration and availability of CDV r in the skin that could lead to lowering of the production costs of the preparations containing this substance.

The goal of this work was to study the concentration of CDV in different skin layers after its application on intact and tape striped human skin. The effect of permeation enhancer 6-(dimethylamino)hexanoic acid dodecyl ester was also investigated. Both attitudes were investigated *in vitro* using modified Franz diffusion cells.

Three different concentration of CDV (0.3%, 1% and 3%) were applied on the intact or tape-stripped skin with or without 1% enhancer. In intact skin, the combination of 3% CDV with 1% enhancer provided epidermal CDV concentration of 1115 µg/g, which is 1.45-times higher than without an enhancer. In tape-striped skin, the epidermal concentration of CDV increased to 2584 µg/g which is 1.55-times higher than without enhancer.

The highest bioavailability was reached when the 0.3 % solution of CDV in combination with 1% enhancer was applied: almost 6 % in intact and 14 % in stripped skin.

Application of the enhancer also increased the permeation of CDV into deeper layers of skin and decreased the lateral drug diffusion.

Thanks to the permeation enhancer the epidermal concentration of CDV can be increased, which could be useful in local therapy of skin infections caused by viruses sensitive to the CDV.