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Erratum

Erratum to "In-silico model of skin penetration based on experimentally determined input parameters. Part II: Mathematical modelling of in-vitro diffusion experiments. Identification of critical input parameters" [Eur. J. Pharm. Biopharm. 68 (2008) 368–379]

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The publisher regrets that in the above article, the publication details of Hansen et al. (2008) were inadvertently omitted from the citation of this reference in the Abstract. Therefore the complete Abstract has been reproduced below in full, with the correct publication details for this reference.

We sincerely apologise for any inconvenience caused.

Abstract

This work describes a framework for in-silico modelling of in-vitro diffusion experiments illustrated in an accompanying paper [S. Hansen, A. Henning, A. Naegel, M. Heisig, G. Wittum, D. Neumann, K.-H. Kòstka, J. Zbytovska, C.M. Lehr, U.F. Schaefer, In-silico model of skin penetration based on experimentally determined input parameters. Part I: experimental determination of partition and diffusion coefficients, Eur. J. Pharm. Biopharm. 68 (2008) 352–367]. A mathematical model of drug permeation through stratum corneum (SC) and viable epidermis/dermis is presented. The underlying geometry for the SC is of brick-and-mortar character, meaning that the corneocytes are completely embedded in the lipid phase. The geometry is extended by an additional compartment for the deeper skin layers (DSL). All phases are modelled with homogeneous diffusivity. Lipid-donor and SC–DSL partition coefficients are determined experimentally, while corneocyte–lipid and DSL–lipid partition coefficients are derived consistently with the model. Together with experimentally determined apparent lipid- and DSL-diffusion coefficients, these data serve as direct input for computational modelling of drug transport through the skin. The apparent corneocyte diffusivity is estimated based on an approximation, which uses the apparent SC- and lipid-diffusion coefficients as well as corneocyte–lipid partition coefficients. The quality of the model is evaluated by a comparison of concentration–SC-depth-profiles of the experiment with those of the simulation. Good agreements are obtained, and by an analysis of the underlying model, critical parameters of the models can be identified more easily.

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