

AP-005

EVALUATION OF FOLLICULAR DELIVERY OF HIGH MOLECULAR COMPOUNDS

Shosho Kijima, Hiroaki Todo¹ and Kenji Sugibayashi

Faculty of pharmaceutical sciences, Josai University, 1-1 Keyakidai, Sakado 350-0295,
Japan

ABSTRACT

Selective and efficient hair follicle delivery is required for several therapeutic drugs and active cosmetic ingredients such as anti-acne drugs and hair growth-promoting agents. In this study, the effect of hair removal was evaluated on the amount of a model high molecular compound, fluorescein isothiocyanate-dextran (4 kDa)(FD-4), or a low molecular lipophilic compound, Flurbiprofen (FP), for comparing that penetrated through the excised skin to demonstrate their direct effects on the hair follicles and to evaluate the contribution of hair follicles on the total skin penetration. Pre-determined numbers of hairs (0, 20, 30, 40 50and 60 hairs) were removed from 3.14 cm² area of excised pig ear skin with tweezers. The treated pig skin was set in a Franz type diffusion cell and FD-4 or FP solution was applied on the epidermal side of skin to determine its skin permeation-time profiles. The skin morphology was observed by a fluorescent microscope after finishing the permeation experiment. Skin permeation of FD-4 increased with an increase in the number of hair removed; whereas no change was observed by the hair removal in the FP permeation. Skin permeation of FD-4 using the hair removed skin shows large variations which might be related to difference in the removed hair sizes. In addition, highly concentrated fluorescence due to FD-4 was observed around hair follicles into the deep skin tissues. These results strongly suggest that hair follicle pathway must be highly related to the skin permeation of high molecular compounds such as FD-4 (not in low molecular lipophilic compounds like FP) and that the hair removal can be used for increasing the skin permeation of high molecular compounds.

Reproduced with permission of copyright
owner. Further reproduction prohibited
without permission.