

〈原 著〉

2 ヒドロキシプロピル- β -シクロデキストリンによる パラベンの In vitro 皮膚透過挙動

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Movement of Skin Permeation Behavior of Parabens by 2-Hydroxypropyl- β -Cyclodextrin

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Abstract

Effects of 2-Hydroxypropyl- β -cyclodextrins (2HP- β -CD) having different degrees of substitution (D.S.) on the skin permeation of four parabens (methyl-, ethyl-, n-propyl, and n-butyl esters of p-hydroxybenzoic acid) were investigated, using in vitro diffusion cell method. The permeation of parabens through a hairless mice skin was significantly suppressed by 2HP- β -CD, with parabens. During the course of skin permeation, parabens were found to be hydrolyzed enzymatically to give the more soluble and less toxic p-hydroxybenzoic acid, showing a feature of saturation kinetics. 2HP- β -CD markedly accelerated this hydrolysis, depending on the free concentration of parabens. From the safety point of view, the present results suggest that 2HP- β -CD is useful as a solubilizer of parabens in the cosmetic formulation.

Keywords: paraben, release control, skin permeation, 2-hydroxypropyl- β -cyclodextrin, enzymatic hydrolysis.