

〈原 著〉

電子常磁性共鳴法を用いた界面活性剤の角層に及ぼす影響の評価 ——水分量の観点から——

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Effect of Surfactant on Human Stratum Corneum Utilizing Electron Paramagnetic Resonance Spectroscopy

—From the point of view of water contents—

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Abstract

Electron paramagnetic resonance (EPR) spectra have been used for studying stratum corneum (SC). Order parameter S (S) obtained from EPR spectra is a good index for evaluating the fluidity of SC lipids. When the SC was treated with sodium lauryl sulfate (SLS), S decreased with the increase of SLS concentration. When the S was followed under dry conditions, it increased and became higher than it was in the control. To investigate such an effect, we measured the spectra from SC treated with four different concentrations of SLS and their weight in both wet and dry conditions. Under the wet condition, S decreased and the weight increased with the increase of SLS concentration, which means the fluidity increased depending on the SLS concentration. When dry, S from SLS treated SC was higher than that of the untreated control, and the weight of SC decreased with the increase of SLS concentration. The S of the SC treated with the higher SLS concentration was smaller than those of the SC treated with lower concentrations for the same water content. These results suggest that the effect of SLS on SC are not only altering the water contents of the SC but also changing the lipid structure, therefore S reflects the structural change of SC and the water content. As for the methodology, wet conditions are desirable in evaluating the effects of SLS on SC utilizing EPR.

Key words: electron paramagnetic resonance (EPR), human stratum corneum (SC), sodium lauryl sulfate (SLS), water content, lipid fluidity.