

〈Regular Article〉

## Applicability of 8-Anilinonaphthalene-1-sulfonic Acid to Measure the Hydrophobicity of Corneocytes

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### Abstract

This study was conducted to clarify whether 8-anilinonaphthalene-1-sulfonic acid (8,1-ANS), a fluorescent probe that is used to measure hydrophobic changes of the microenvironment formed by proteins, can be used to measure the degree of hydrophobicity of corneocytes. Firstly, the fluorescence intensity of 8,1-ANS in keratin films in which COOH groups were chemically modified with hexylamine or with Alexa Fluor 594 cadaverine to increase hydrophobicity was examined. Increase of hydrophobicity in these chemically modified keratin films was indicated by measuring a contact angle of deionized H<sub>2</sub>O. The fluorescence intensity of keratin films originating from 8,1-ANS showed increases that corresponded to the decreased fluorescence intensity of Alexa Fluor 594 cadaverine, which was used to label COOH groups that remained after the covalent bonding of hexylamine. Furthermore, keratin films with COOH groups that were fluorescence-labelled with Alexa Fluor 594 cadaverine also showed increased fluorescence intensity of 8,1-ANS. These results showed that 8,1-ANS changed its fluorescence intensity in response to the hydrophobic modification of keratin films, which indicated the applicability of 8,1-ANS to measure the hydrophobicity of corneocytes. The fluorescence intensity originating from 8,1-ANS labeling of corneocytes, which were chemically modified to increase their hydrophobicity, was then examined. The fluorescence intensity of corneocytes that originated from 8,1-ANS showed changes corresponding to the hydrophobic modifications. These results demonstrated that 8,1-ANS is a useful fluorescent probe to measure the hydrophobicity of corneocytes.

**Key words:** corneocyte, hydrophilicity, functional group, keratin film.