

〈原 著〉

ネイルエナメルによる爪の黄変について ——原因とその防止——

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Yellowing of the Nail Caused by Nail Enamel — Its causes and effective prevention —

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Abstract

It is well known that continuous use of nail enamel for a long period causes yellowing of the nail plate. There are two possibilities for this reason. One is the pigment staining, and the other is the chemical reaction between the components of the nail enamel and that of the nail itself. Considering the fact that even nail enamels containing no color pigments cause yellowing, we took the chemical changes more seriously and investigated its mechanism. As a result, we found that under weak acidic condition, the existence of a trace of nitrite ion derived from nitrocellulose causes the yellowing of the nails. And from the HPLC and mass spectrometric analysis of artificially yellowed nails, 3-nitrotyrosine which has a yellowish appearance was detected. It is assumed to be derived from the reaction between nitrite ion and tyrosine which is one of the amino acid residue of nail keratins. These results strongly suggest that 3-nitrotyrosine is one of the main cause of nail yellowing. To prevent yellowing, it seemed very effective to use materials having a decomposing activity against nitrite ion. Moreover, using acrylic polymer emulsion as a film-forming material instead of nitrocellulose, the yellowing of the nail was perfectly prevented even after 6 month usage test.

Key words: nail enamel, yellowing, nail, nitrite ion, polymer emulsion.