〈原　著〉

皮膚表面3次元形状パラメータを用いたしわの定量解析

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Quantitative Analysis of Human Skin Wrinkle Using Three-Dimensional Surface Parameter

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Abstract

We developed a replica three-dimensional morphometric system (3 D analysis) by the light cutting method. The theoretical resolution of this system is 12.5 μm in depth, and the time required for measurement is 8 s. Obtained data were expressed as a three-dimensional surface roughness value using analysis software (Tailor Hobson Co., Ltd.). The coefficient of variation measured using replicas obtained from wrinkles at the eye corners was 1.77–4.36 when the replica was placed in this system. To evaluate the usefulness of 3 D analysis for measuring wrinkles, this method was compared with the scoring method using wrinkle standard photos and the conventional image analysis of replicas. At the eye corners, *sWv*, a roughness parameter of 3 D analysis, was best correlated with the wrinkles score ($r=0.713$), indicating its usefulness. In the forehead, the image analysis method was best correlated with the wrinkle score ($r=0.756$), and results of 3 D analysis were poorly associated (*sWv*; $r=0.492$). These results suggested limitations in the application of 3 D analysis. In the evaluation at the eye corner after use of wrinkle improving agents, 3 D analysis confirmed significant effects. Thus, this 3 D analysis appears to be an effective method for measurement of wrinkles at the eye corners.

Key words: wrinkle, aging, eye-corner, evaluation, three-dimensional parameter.