

(原 著)

## 非接触測色システムにより計測した女性顔面色素沈着 部位における皮膚色の季節変動

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### Seasonal Skin Color Variation of the Pigmented Area on the Female Face Measured by Remote Color Sensing System

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#### Abstract

It is said clinically that pigmentation on female face gets worse in the summer season because of the increase in UV radiation. In order to confirm this phenomenon, the present study attempted to quantitatively compare the skin colors of pigmented and non-pigmented area through a year. Volunteers comprised 20 females of 34-49 years old living around Tokyo. The colors of the part of pigmented cheek area (PA) and of non-pigmented forehead area (NA) were evaluated by Remote Color Sensing System. The system provides the color reference values of  $L^*$ ,  $a^*$  and  $b^*$ ; which mean the brightness level from black (0) to white (100), the balance between red (+) and green (-), and the balance between yellow (+) and blue (-), respectively. The color difference ( $\Delta E^*$ ) represents the difference between two colors. Larger the value of  $\Delta E^*$  between PA and NA, more conspicuous the pigmented area looks. During the study, the amount of UV radiation was measured with UVA, B Radiometer (Eko I.T. Co. Ltd) every day. The seasonal differences of  $L^*$ ,  $a^*$  and  $b^*$  values were statistically examined by one-way analysis of variance. The  $\Delta E^*$  values at February and at August were examined using paired  $t$ -test. The  $L^*$  value of PA decreased during March-August and that of NA decreased during April-August. After that  $L^*$  values of both area recovered. These changes of  $L^*$  value of PA and NA were significant between summer and winter. But the degree of decreasing at PA was larger than that at NA in summer. The  $a^*$  value of both PA and NA changed little and no outstanding feature through the year (The data is not shown.). The  $b^*$  value of PA got higher in summer and decreased to the starting level in winter. This seasonal variation was significant. On the other hand the  $b^*$  value of NA did not change apparently through the year. The  $\Delta E^*$  between PA and NA gradually increased toward the summer season and became maximum in August. The seasonal variation of  $L^*$ ,  $b^*$  and  $\Delta E^*$  value corresponded well with the change of UV radiation. These results indicate that; 1) The skin color of the pigmented area got dark and yellow in summer and recovered in winter. Pigmented area looked more conspicuous in summer. 2) The seasonal variation of skin color of pigmented area corresponded well with the change of UV radiation.

**Key words:** skin color, seasonal variation, pigmented area, image analysis.