

〈原 著〉

## 人が浴びる太陽紫外線の定量評価

松江 浩二\*, 新井 清一\*, 遠藤 恵子\*\*  
竹下 秀\*\*\*, 坂田 俊文\*\*\*, 佐々木政子\*\*\*

### Quantitative Evaluation of Solar Ultraviolet Radiation Dosage on the Human Face

Kohji MATSUE,\* Seiichi ARAI,\* Keiko ENDO,\*\* Shu TAKESHITA\*\*\*  
Toshibumi SAKATA,\*\*\* Masako SASAKI\*\*\*

#### Abstract

As a consequence of the depletion of stratospheric ozone, an increase is expected in biologically active solar ultraviolet-B radiation in outdoor environments. Therefore, it is important that the biological effects of solar ultraviolet (UV) radiation be understood better. The exact amount to which people are exposed to UV radiation in their daily lives should also be measured. In this study, UV dose on the human face was measured in selected outdoor environments: soil, concrete, grass, sand, and snow, with solar elevations ranging from about 30° to 70° from the horizon. The UV dose exposure on human face is similar in each outdoor environment, except snow. Snow gives an extremely large reflection of UV radiation, with the exposure to the human face being as much as in summer. The UV dose exposure on the human face in all environments is very similar at solar elevations over 50°. Also, in order to protect against the effects of solar UV radiation, the shading effect, of a tree and of a person's cap or hat are examined. It is noted that solar elevation and direction to the sun are two major factors for protection of the human face from solar UV radiation, and that physical barrier such as a tree, a cap or a hat can not protect the human from UV radiation completely.

**Key words:** outdoor environments, solar UV irradiance, UV-A, UV-B.