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The necessity of solar near-infrared protection

Over half of the solar energy consists of near-infrared and intensive or long-term solar near-infrared exposure induces photoaging. Despite the wide prevalence of a variety of ultraviolet blocking materials, such as sunscreen, sunglasses, glasses, films, umbrellas and fibers that are useful in protecting the skin against ultraviolet exposure, solar near-infrared cannot be blocked and the necessity to protect against solar near-infrared has not been well recognized. Solar near-infrared can penetrate the skin and the sclera and affect the deeper tissues, including muscles, lens and retina with its high permeability. I have elucidated that solar near-infrared can induce various biological effects. Continual long-term exposure to solar near-infrared performs as an aging factor. Consequently, solar near-infrared can induce various kinds of tissue damage and diseases such as undesirable photoaging, long-lasting vasodilation, long-lasting muscle thinning, sagging and skin ptosis and potentially photocarcinogenesis, when biological solar near-infrared protection is not achieved. To clarify the necessity to protect against near-infrared protection is not achieved. To clarify the necessity to protect against near-infrared treatment using 2 sets of transparent polycarbonate plates, one to block ultraviolet and the other to block both ultraviolet and near-infrared. The cell viability was significantly decreased after near-infrared irradiation in near-infrared treated cells without a protective polycarbonate plate and near-infrared treated cells using the polycarbonate plate that only blocked ultraviolet, whereas both ultraviolet and near-infrared should be considered to prevent tissue damage.

Biography

Yohei Tanaka is one of the leading Plastic Surgeons in Japan. He directs his clinic, Society for Near-infrared Rays Research and International Photobiological Society. He conducts many researches as a Visiting Professor of Niigata University of Pharmacy and Applied Life Sciences and Lecturer of Tokyo Women's Medical University. He has published over 20 peer-reviewed papers in English and has edited 2 international open access books regarding near-infrared. His goal is to discover the most effective near-infrared wavelengths for rejuvenation and anti-cancer therapy and to further study solar near-infrared and how best we can protect ourselves against its photoaging.

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