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Premature aging induced by sunlight

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Nearly all living things on this earth need sunlight. However, the content of sunlight, especially ultraviolet (UV) even in small doses, can cause health problems in humans, such as premature aging. There are two distinct types of aging, first that are caused by the genes we inherit, and are called chronological or intrinsic aging and the other type of aging is known as extrinsic aging. It is caused by environmental factors such as pollutant and also sun exposure. Sunlight can be divided into 4 types based on the wavelength those are ultraviolet B (UVB, 280-315 nm), ultraviolet A (UVA, 315-400 nm), visible light (400-760 nm) and infrared (760-106 nm). Repeated exposure to UV lights can cause damage to the skin such as accelerated aging process known as premature aging or photoaging. It is characterized by dryness, wrinkling, elastosis, telangiectasia, and anomalous pigmentation. Ultraviolet A (UVA) are the most effective in penetrating skin into dermis layer. UVB lights can cause damage to DNA, especially the basal epidermal cells. They produce free radicals, as well as cell cycle arrest contributes to the photo aging of the skin. Exposure to UV lights can cause reactive oxygen species (ROS) production along with all its consequences such as DNA damage, induce matrix metalloproteinase (MMP) production, activation of mitogen-activated protein kinases (MAPK), induction of protein kinase C (PKC) δ , induction various inflammatory cytokines such as NF κ B, AP-1, and HO-1 in which all contribute to damaging the skin's collagen network, induce inflammatory reactions, and also inhibit skin cell renewal processes which ultimately lead to photo aging.

Biography

Dhelya Widasmara has completed his specialization of Dermatovenereology at the age of 28 years from Airlangga University and now is taking postdoctoral studies in the same place. She is the staff of Infection Division of Dermatovenereology department in Saiful anwar General Hospital Malang -East Java. She has joined few courses and seminars abroad about dermatology and cosmetology. Not only joined seminar, she has been a speaker in the few seminars in Indonesia. She is now focusing in leprosy research.

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