

COMMENTARY & NOTES

Letter to the Editor: Commentary on “Avoiding the Hazards of Ultraviolet Light in the Adolescent Population”

Elise M. Weisert, BS¹, Ethan D. Hinds III, BBA¹

¹The University of Texas Medical Branch, School of Medicine, Galveston, TX

We read with great interest the article by Auchus et al. that addressed adolescent sun protection, tanning behaviors, and the physician’s approach to challenging questions about sun protection in adolescents.¹ Auchus et al. describe the role of ultraviolet light in both acute and chronic skin conditions, including skin cancer and premature aging. They posit that adolescents tend to be unconcerned about skin cancer risk and suggest that physicians should instead inform adolescents about the signs of premature aging, including wrinkles and fine lines, associated with natural and artificial sun exposure. While adolescents frequently engage in tanning behaviors, often without adequate sun protection, their risk of premature aging goes beyond exposure to ultraviolet light. An emerging body of literature suggests that visible light exposure (400-700 nm) may also contribute to premature aging of the skin and hyperpigmentation.² Studies show these effects are secondary to the production of reactive oxygen species (ROS).³ Penetration of visible light into the dermis generates ROS that upregulate proinflammatory cytokines and matrix metalloproteinases, causing skin inflammation that contributes to photoaging and collagen breakdown, respectively.³

Though the sun is the largest producer of visible light, artificial sources of light also emit radiation, including televisions, LED light, fluorescent light, and screens such as cell phones, computers, and tablets.⁴ Their peak emission lies in the blue spectrum (400-490 nm).⁴ As the use of technology, especially smartphones and tablets, continues to propagate, adolescents receive more radiation than ever from electronic devices, even from camera flashes.⁴ The risk may even include children, who increasingly utilize electronics for games, school, and communication. In addition, visible light from artificial sources generates concern due to high exposure time and closer proximity compared to UV visible light.

There are a number of methods to protect the skin from visible light damage, including barriers such as topical antioxidant serums or blue light filters for phones, tablets, and computers. Many devices now also have settings to disable blue light in favor of yellow light, which were created to combat blue light-induced insomnia in users.⁵ Standard UVA/UVB protecting sunscreens appear to have inadequate effects on the ROS produced by visible light, suggesting the need for fortification with topical antioxidants, which protect against oxidative

stress to the melanocytes.^{3,6} Providing education to this young patient population about the possible benefits of utilizing a topical antioxidant serum on the face and neck when they apply daily sunscreen offers an opportunity for protection against skin cancers, as well as protection from premature aging and hyperpigmentation. Although public health concerns for melanoma and other skin cancers are more well known, focused early education on the hazards of both UV and visible light may lead to lasting habits in adulthood. Lastly, as Auchus et al. suggested, framing the discussion around prevention of premature aging is likely the most effective strategy for patient compliance in the adolescent population.

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Corresponding Author:

Elise Weisert, BS
School of Medicine
The University of Texas Medical Branch
Galveston, TX
Phone: 817-243-5019
Email: emweiser@utmb.edu

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