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Topical antioxidants for protection and reversal of environmental stress

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Even with increased sunscreen application, full UV protection is rarely achieved and exposure to UVA as well as to UVB is potentially hazardous. Although UVA is less erythrogenic and carcinogenic than UVB, increasing evidence has proven that the skin suffers synergistic damage from UVA in combination with ubiquitous pollutants generated primarily by combustion of fossil fuels and cigarette smoking. Our laboratory demonstrated that benzo[a]pyrene (a major environmental pollutant) is a photosensitizer which generates reactive oxygen species upon exposure to UVA. Evidence of this damage and the mechanisms of synergy will be presented. Our research has further shown that topical antioxidants (vitamins C, E, and selenium) can not only protect, but also reverse this photo and environmental damage. Topical antioxidants can be absorbed by the skin to give a reservoir of protection that is not lost with swimming or perspiration. The challenge is to formulate each specific antioxidant with the correct molecular form so that it is stable and is indeed absorbed and can be metabolized by the skin to give effective activity. The requirements for topical vitamin E (d- α -tocopherol), vitamin C (L-ascorbic acid), and selenium (L-selenomethionine) will be discussed in detail and scientific substantiation of efficacy will be presented. Used in conjunction with sunscreen, not only protection from and reversal of photoaging, but also protection from skin cancer can be achieved.

Biography

Karen Burke completed her Ph.D. (Biophysics, Cornell University), post-doctoral research (Rockefeller University), and her MD and Dermatology Specialty (New York University). She is Assistant Clinical Professor (Mt. Sinai Medical Center) and in private practice. She has written more than 65 scientific publications, was Medical-Science Editor of the *UN Diplomatic World Bulletin*, and has been in *Castle-Connolly's Guide to Best Doctors* (over 10 years). She is an Honorary Life Governor of the NY Academy of Sciences, on the Boards of NY Stem Cell Foundation, Parkinson's disease Foundation, Poly Prep Country Day School. She serves on the US FDA General and Plastic Surgery Device Advisory Panel.

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