



A new understanding of Environmental damage to the skin and prevention by topical antioxidants

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Abstract

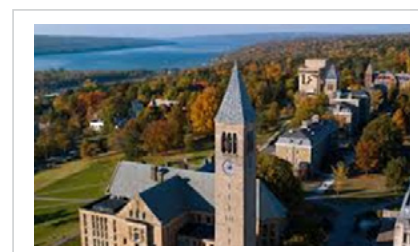
This presentation reviews recent research which has given us new insights into the molecular biology of extrinsic aging of the skin. Not only does UV (ultraviolet) irradiation directly cause photoaging of the skin, but also environmental pollutants significantly damage exposed skin by several mechanisms. Exposure to the noxious gases of air pollution with simultaneous exposure to UVA can act synergistically to accelerate photoaging and to initiate skin cancer. Also, ozone generated from pollutants reacting with UV induces oxidative stress of the skin's surface via formation of lipid peroxidation products, with cascading consequences to deeper layers. Furthermore, new studies have demonstrated that particulate matter (PM) pollutants can penetrate the skin trans epidermally and through hair follicles to induce skin aging via the aryl hydrocarbon receptor (AHR), a recently discovered ligandactivated transcription factor that regulates and protects keratinocytes, melanocytes, and fibroblasts. With this understanding that extrinsic aging of the skin is not only due to photoaging, we realize the necessity of protection beyond sunscreen. Fortunately, correctly formulated topical antioxidants can prevent damage inflicted by both UV and environmental pollution. The stringent requirements to achieve stability, penetration, and activity of these effective antioxidants will be described.

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.

Publication

1. Burke Platzer, Karen E. and Scheraga, Harold A. "The NH₂-terminal Amino Acid of Bovine Prothrombin," *Biophys. Acta.* 207, 262-267, 1970.
2. Burke Platzer, Karen E., Momany, Frank A. and Scheraga, Harold A. "Conformational Energy Calculations of Enzyme-Substrate Interactions. I. Computation of Preferred Conformations of Some Substrates with Chymotrypsin." *Internat. J. Peptide Protein Research* 4, 187-193, 1972.
3. Burke Platzer, Karen E., Momany, Frank A. and Scheraga, Harold A. "Conformational Energy Calculations of Enzyme-Substrate Interactions. II. Computation of the Binding Energy for Substrates in the Active Site of Chymotrypsin." *Internat. J. Peptide Protein Research* 4, 201-209, 1972.



[9th International Conference on Nutrition, Food Science and Technology](#) | Rome, Italy | June 17-18, 2020

Citation: Karen E Burke, A new understanding of Environmental damage to the skin and prevention by topical antioxidants, *Food Science 2020, 9th International Conference on Nutrition, Food Science and Technology, Rome, Italy, June 17-18, 2020, 06*