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Prevention of environmental damage to the skin by topical antioxidants

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 transepidermally and through hair follicles to induce skin aging via the aryl hydrocarbon receptor (AHR), a recently discovered ligand-activated 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.

Speaker Biography

Karen Burke is a dermatologist and research scientist. After her Ph.D. in biophysics from Cornell University, Ithaca, NY, she completed post-doctoral fellowships at Cornell University Medical College and The Rockefeller University. She earned her M.D. at New York University with residency in dermatology. She is currently an Associate Clinical Professor in the Department

She has written many research articles and medical book review chapters as well as six popular books (including *Thin Thighs for Life*, *Great Skin for Life*, and *Thin Thighs Diet and Workout*). She is often quoted as a skincare expert in many fashion and health magazines. She currently serves on the editorial boards of *Cutis*, *Aesthetic Dermatology News*, *Cosmetics in Dermatology*, and *Journal of Drugs in Dermatology*. For many years, she was the Medical and Science Editor of the *Diplomatic World Bulletin* (United Nations, New York) for which she wrote a monthly "Health Update" column. She has been a consultant to many corporations including L'Oréal (Paris, France). She has been cited as one of New York's prominent physicians by *New York Magazine* and *The New York Times* and by *Castle-Conolly Guide to Doctors* each year since 2001. She received a "Women of the Year" award from the New York Police Athletic League (2009), a "Distinguished Woman Award" from Northwood University (2010), and a "Trademark Woman of Distinction Honor" (2017). In 2014 she received a Presidential Citation from the American Academy of Dermatology and was elected to the prestigious American Dermatological Association (and to the ADA Board in 2017).

She is an Honorary Life Governor of the New York Academy of Sciences and serves on the Board of Directors of the New York Stem Cell Foundation and the Parkinson's Disease Foundation, and is a Trustee of the Poly Prep Country Day School. She has also served on the United States Federal Drug Administration (FDA) General and Plastic Surgery Device Advisory Panels since 2007. She is founder and president of the Karen E. Burke Research Foundation and of Longévité, Ltd. She was previously on the Board of the Women's Dermatologic Society and is still active in that organization. She serves on the board of the Hospitality Committee for UN Delegates and is an active member of the Women's Forum of the United Nations and One Bright World as well as of many scientific and medical organizations including the American Academy of Dermatology, the Skin Cancer Foundation, The Dermatology Foundation, the American Society of Dermatologic Surgery, the Society for Investigative Dermatology, and the American Medical Association, and others.

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