



Wednesday, November 21th, 2012, 2:00 P.M.

Room No. 109, DASAN bldg. 1st Floor

(Host: Prof. Jae Gwan, Kim / Language: English)

Light & Antioxidants

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Light therapy with sunlight is one of the oldest therapeutic modalities used to treat various skin diseases including psoriasis and vitiligo. Phototherapy with the use of an artificial irradiation source has been exploited and it has been accepted as a therapeutic modality in the treatment of many cutaneous conditions. Light-emitting diode (LED), an artificial light source, is a complex semiconductor that converts electrical current into incoherent narrow spectrum light. LED can trigger natural intracellular photobiochemical reactions even though it provides a much gentler delivery (not enough power to damage tissues) of the same wavelengths of light compared to lasers. So, LED photobiomodulation is the newest category of non-thermal light therapies to find its way to the dermatologic armamentarium. These days, powerful LEDs are now used for a variety of conditions ranging from cosmetic indications to skin cancer treatment. Recent studies showed that LED therapy with specific wavelengths and appropriate doses had anti-bacterial and anti-fungal effects as well as anti-inflammatory effects. I will review the effects of light using LED on skin and skin-related diseases such as atopic dermatitis, seborrheic dermatitis, acne, and photorejuvenation.

By the way, oxygen is the life-driving molecule without which all higher eukaryotic organisms could not survive. The dark side of oxygen relates directly to the fact that atomic oxygen is a free radical and molecular oxygen is a free biradical. Reactive oxygen species (ROS) are induced by both endogenous and exogenous sources. Exogenous sources include UV irradiation, atmospheric pollutants, and chemicals. ROS are known to cause oxidative modification of DNA, proteins, lipids, and small cellular molecules. They are associated with tissue damage and the contributing factors for inflammation, cancer, dry eye, skin aging, and others. The human body is not unprepared for the formation of reactive species. Cells are equipped with enzymatic and non-enzymatic antioxidant systems to eliminate ROS. There are many botanical antioxidants, since all plants must protect themselves from oxidation following UV exposure in the outdoor environment in which they grow. Antioxidant botanicals can contribute significantly to the overall ROS scavenging activity when they are delivered from plants' extracts and foods. Antioxidant botanicals will be available as therapeutic agents for preventing the dry eye syndrome and eye diseases. The development of antioxidant glasses for dry eye syndrome, a common eye disease, will be discussed.

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