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How the epidermis and dermal collagen/extracellular/matrix interact with each other

Mammalian skin epidermis and dermis are usually considered as separate entities, owing to their different functions. However, there is much interaction between them, and it is even suspected that altered dermis can be a factor in epidermal carcinogenesis. In addition to epidermal carcinogenesis caused primarily by UVB (290 – 320 nm) radiation, UVA wavelengths (320 – 400 nm) can cause changes in dermal architecture and composition that causes a response analogous to wound healing. One hypothesis is that the latter changes may render the overall milieu more favorable for epidermal skin cancer formation. In cases of epidermal pigmentary incontinence, melanin pigment may play an additional role in dermal damages. In the present study, we use collagen's intrinsic fluorescence properties to investigate the action of UV on two acid-soluble type I collagens in an *in vitro* system. These involve thermal (i.e. temperature dependence in ground state properties) and photochemical (involving excited state transformations). In further experiments, we are beginning a systematic study of the effect of surrounding extracellular matrix (ECM) on our present results. In a preliminary study (to be published) we have found, somewhat surprisingly, that addition of sodium hyaluronate (HA) has little or no effect on the thus far observed properties. We envision expanding the investigation to include the addition of proteoglycans or at least their component chondroitin sulfates.

Biography

Julian M Menter received his PhD degree in Chemistry from the George Washington University in 1969. He completed a Postdoctoral fellowship with Prof. Dr. Theodor Foerster at the Institut fuer physikalische Chemie der Universitaet Stuttgart, Germany. Subsequently, he was at the University of Alabama, Birmingham, and the VA Medical Center (Atlanta). He currently serves as Research Professor of Biochemistry at Morehouse School of Medicine. He is recognized internationally for his work in the areas of collagen photochemistry and melanin photobiology as pertaining to redox reactivity.

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