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Effect of temperature and hyaluronate on photochemical changes in calf skin collagen solutions at physiological PH

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Mammalian collagens contain several age-related fluorescent chromophores that are unstable to solar UV wavelengths. The consequences of the resulting collagen photo-degradation are not well known, since the direct collagen – UV interactions are poorly described at best. We are studying these interactions by following UV – induced changes in calf skin type I collagen fluorescence as functions of time, temperature, and hyaluronic acid (HA). We have observed that UVC radiation (mainly 254 nm) causes dimerization of tyrosyl residues to dityrosine and the disappearance of an age-related tyrosine oxidation product that is formed in the ground state. Dityrosine formation does not require oxygen and is relatively insensitive to changes in temperature and age of sample. The age-related oxidation product destabilizes the overall collagen supramolecular structure. Added sodium hyaluronate (2:1 ratio) shows little or no effect on these results. This latter result may indicate that there is little physical interaction between the collagen telopeptide and HA domains *in vitro*.

Biography

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 Universtiaet 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. Menter is recognized internationally for his work in the areas of collagen photochemistry and melanin photobiology as pertaining to redox reactivity.

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