conferenceseries.com

3rd Glycobiology World Congress

June 26-28, 2017 London, UK



Julian M Menter

Morehouse School of Medicine, USA

The interaction between dermal Type I collagen and hyaluronic acid (HA) in phosphate buffered solution, pH=7.4

Statement of the Problem: As dermal collagen fluorescence spectra are time- and environment-sensitive, they show promise as biomarkers and prognosticators of damage due to aging and other pathology in general. The rate of photochemical formation of dityrosine form internal tyrosine residues is quasi-linear and its slope can serve as an indicator of the rate of ground and excited state molecular damage. *In vivo* dermal collagen is embedded in surrounding extra cellular matrix (ECM) containing a complex of hyaluronic acid (HA) and proteoglycan (PG). In this work, we report preliminary results of collagen-HA interactions in model *in vitro* system.

Methodology: Solutions containing 1.0 mg/ml type I collagen ± 2.0 mg/ml HA (elastin products) in 0.1 M phosphate buffer, pH 7.4 were irradiated from 0-200 min in a thermostated cuvette (Hellma Cells) with a 4 W filtered UVG-11 hand lamp emitting at 254 nm. Dityrosine formation as a function of time was monitored by its fluorescence at excitation/emission wavelengths 325/400 nm for temperatures between 13-60°C.

Results & Discussion: For T<Tm (\sim 36°C) HA retards the rate of dityrosine formation by \sim 20-30%, indicating stabilization of collagen scaffolding by HA. At T>Tm, where the coiled conformation dominates, there appears to be no systematic effect of HA on collagen stability. Thus, stabilization of collagen helical structure seems to be one important function of the ECM.

Biography

Julian M Menter has received his PhD degree in Chemistry from the George Washington University in 1969. He has completed a Post-doctoral Fellowship with Professor Doctor 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 a 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.

jmenter@msm.edu