

Abstract Submitted  
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**Prefibrillar Formation Conditions of  $\beta$ -Lactoglobulin by Titration and Chaotropes Urea and KSCN Under Thermal Load** JEREMIAH BABCOCK, ROLANDO VALDEZ, LORENZO BRANCALEON, University of Texas at San Antonio — The harmful growth of toxic oligomers in the formation of protein amyloid fibrils have been connected to degenerative diseases like Alzheimer's and Huntington's diseases. Understanding the fundamental mechanisms behind protein unfolding and subsequent fibrillogenesis may provide a way to stop the process from occurring. The purpose of this study was to identify favorable fibril growth conditions for a globular model protein  $\beta$ -lactoglobulin using the chaotropes urea and KSCN, along with titration of a pH 7.04 phosphate buffer solution at 40 °C over five days. Time-resolved and steady-state fluorescence was used to examine the shift in emission of the tryptophan amino acids over the applied denaturation ranges. BLG, a dimer in native form, monomerized and partially unfolded at 5 M Urea, 2 M KSCN and at pH 2 in phosphate buffer *in vitro*. Exposure of the solutions to continuous heat over time caused a increase in the lifetimes and red shift in the emission spectra, indicating the possible beginning of nucleation. The study has provided a base for continuation of the study of oligomerization and subsequent fibrillation of BLG, which may provide a fundamental mechanism of formation transferable to other proteins *in vivo*.

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