



Thermal Induced Unfolding Of Human Serum Albumin Isomers: Assigning Residual Alpha Helices to Domain II.

Ahmad B, Muteeb G, Alam P, Varshney A, Zaidi N, Ishtikhar M, Gamal Badr, Mahmoud MH, Khan RH.

Abstract:

In this study we have investigated the heat induced denaturation of HSA byutilizing spectroscopic approaches including fluorescence and circular dichroism. Thermal denaturation of N isomer (domain I-III remains intact), B isomer (loss of helical structure of interdomain contacts) and I state (domain II intact) was found to be co-operative processes while for F isomer domains unfold non-cooperatively. These finding pointed out that during N-F transition, HSA suffers more structural alterationswhich are not localized only to domain III. Loss of secondary structure in the temperature range 20-60 0C without effecting tertiary structure of N isomer of HSA is mainly due to loss in helical extensions connecting domain I to II and domain II to III. All the four thermally denatured states (60-96 0C) of HSA retained approximately 50% residual alpha helical structures. Near-UV CD used as a probe for tertiary structure indicated that heat denatured states lost almost all of the tertiary contacts,thereby forming molten globule like states. Furthermore, our results provide evidence that residual helical structuresare mainly located in domain II.

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