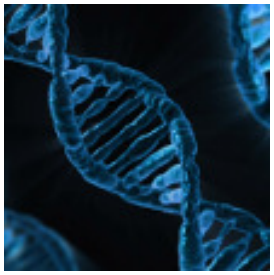

Contribution ID: **60** Type: **Poster**

Role of water on protein thermal stability investigated by differential scanning calorimetry

Protein thermal stability is essential to the outcome of various biomedical and pharmaceutical applications such as thermal therapies and biopreservation [1]. The most dramatic change during heating is denaturation, which is a transition from native state to denatured state. In this process, hydration plays a key role in determining the protein dynamics and structural change.

In this contribution we will present an investigation of the effect of the hydration level on the denaturation of lysozyme induced by heat treatment using DSC. The transition in enthalpy of the denaturation happens at a hydration range between 30% - 35% which might represent a different mechanism of denaturation. Interestingly, the transition threshold is in good agreement with the results obtained from Raman spectroscopy for hydration of native protein [2]. Here we will discuss in more detail about the denaturation mechanism and demonstrate a strong correlation between the hydration levels of the native proteins, thus its native conformation and their resulted denatured state.

References

1. Bischof, J.C. and X. He, Thermal stability of proteins. Ann N Y Acad Sci, 2005. 1066: p. 12-33.

2. Kocherbitov, V., et al., Hydration of lysozyme studied by Raman spectroscopy. J Phys Chem B, 2013. 117(17): p. 4981-92.

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Session Classification: Poster session with drinks & nibbles

Track Classification: Dynamics of proteins in crowded and confined geometry