PhD Open Seminar

Department of Chemistry, IISER Bhopal

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Topic of Seminar: **"Exploring Protein-Drug and Protein-surfactant Interactions by Spectroscopic and Calorimetric Approaches"**

Date: March 24, 2017 **Time: 11 am** **Venue: AB-II (401)**

Abstract

Proteins interact with a variety of drugs and ligands and the structure and dynamics of a protein depend on the nature of the drug/ligand.[1] The protein-surfactant interaction studies have many-fold applications in food, detergent, and pharmaceutical industries. A quantitative understanding of these processes has fostered tremendous interest owing to their ability to furnish new insights into the development of structure-based molecular design strategies. The motivation of the thesis is to gain a molecular level understanding of how anionic (bile salts) and neutral (Tween) surfactants interact with plasma protein, Human Serum Albumin (HSA) in terms of not only deciphering the modulations of protein structure and function but also exploring the underlying binding forces.[2,3]

An in-depth understanding of protein-drug interactions appears to have significance in relation to design of new drug molecules/biomedicines, subsequent control over their therapeutic efficiency, and safe-engineered drug delivery. The process of drug-protein interaction is usually intrinsically complex in nature, particularly in the sense that the overall binding interaction is governed by a host of interaction forces including hydrogen bonding, ionic interaction, van der Waals interaction and so forth. This thesis involves our efforts toward exploring and quantifying the thermodynamic and binding parameters of the interactions of a variety of small drug molecules (Norfloxacin and Chloramphenicol) with selected carrier proteins (HSA and bovine β-Lactoglobulin)[4-6] using several spectroscopic and calorimetric techniques.

References

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2. Ghosh, N.; Mondal, R.; Mukherjee. S. *Langmuir* **2015**, *31*, 1095.
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