

Murthy, B. N.; Jayaraman, N.; Sinha, S.; Surolia, A.; Indi, S. S., 2008, "SPR and ITC determination of the kinetics and the thermodynamics of bivalent *versus* monovalent sugar ligand-lectin interactions" *Glycoconjugate J.*, 25, 313 – 321.

This manuscript describes a detailed kinetic and thermodynamic study of the interaction of the bivalent sugar ligands with a lectin. The multivalent interactions are considered essential for meaningful sugar-lectin complexations, as the multivalency is now known to offer considerably increased binding affinities. While a number of inhibition and thermodynamic studies involving synthetic multivalent ligands are known, the kinetic studies of the interactions are much less known. The studies presented in this report show the finer details of the kinetic on-off rates that accompany the bivalent sugar-lectin intermolecular interactions. The study establishes that the k_{on} and k_{off} kinetic rates are considerably different for the bivalent ligands, when compared to the constituent monovalent ligands. Following the kinetic and thermodynamic studies, we have also assessed the particle size changes that accompany the ligand-lectin complexations, with the aid of dynamic light scattering and transmission electron microscopic methods. The studies also open up a distinct possibility to generate defined protein aggregates, by taking advantage of the weak affinity interactions of the sugar ligands with the protein receptors.