BIOPHYSICAL CHARACTERISATION OF MALABARICONE-C BINDING WITH HUMAN SERUM ALBUMIN

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Malabaricone C (MLC) is a ligand compound found in the pericarp of Myristica fragrans, commonly known as nutmeg. It has attracted much attention due to its various pharmacological actions such as antioxidant, anti-inflammatory, anticancer, and antidiabetic effects. In this study, the fluorescence activity of MLC by human serum albumin (HSA) was investigated. The fluorescent activity of MLC-HSA has been found to be dependent on factors such as pH, temperature and concentration. The resulting fluorescence spectra of MLC-HSA titrations, performed at 290 K, 300 K and 310 K in phosphate buffer (pH 7.4) displayed progressive quenching of the fluorescence intensity of HSA with increasing MLC concentrations at all three tested temperatures. The extent of MLC-induced quenching of protein fluorescence was found to be inversely correlated with temperature at each MLC concentration, as 49%, 42% and 20% at 290, 300 and 310 K, respectively quenching was noticed with 3 μM MLC concentration. The shift in binding equilibrium is the equilibrium between free MLC and bound MLC-HSA complexes affected by temperature fluctuations. According to the thermodynamic data of the binding reaction, hydrophobic interactions, hydrogen bonds, and van der Waals forces stabilized the MLC-HSA complex.

Keywords - Malabaricone C; Drug Displacement, Ligand-Protein Interaction; Fluorescence Quenching.