

SOLUBILIZATION AND BINDING OF A WATER-INSOLUBLE BENZOPHENONE TO BSA.

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A water-insoluble benzophenone isolated from *Garcinia sp* (M11), with reported antioxidant and anti-inflammatory properties *in vivo*, become soluble in aqueous solution in the presence of BSA. In this sense, binding equilibrium of M11 to increasing BSA concentrations has been studied at 300 and 310 K using spectrophotometric (50mM of Tris-HCl buffer pH 7.46) and DC polarography (Britton-Robinson buffer, pH 7.46). Data are shown as mean±SD. Scatchard and Hill treatment of data suggested a cooperative phenomenon for the binding, more pronounced at 310 K. Mean thermodynamic values at 300 and 310 K were 51±3 and 74±6 binding sites, equilibrium association constants of $7.3\pm 0.8\times 10^3$ and $15.7\pm 6.0\times 10^3$, respectively, with ΔG^0 of $24.9\text{ kJ}\cdot\text{mol}^{-1}$, ΔH^0 of $3.4\text{ kJ}\cdot\text{mol}^{-1}$, and ΔS^0 of $-0.9\text{ kJ}\cdot\text{mol}^{-1}\cdot\text{K}^{-1}$. First and second derivative of spectral data suggested a slightly protein transconformation occurring upon high macromolecule concentration. Modified Brdicka currents of BSA were also observed from polarographic data during the interaction at 300 K. These data indicated a hydrophobic and electrostatic mechanism of ligand-protein binding that allow solubilization of M11 required for physiological media.