

Spectroscopic Investigations of pentobarbital interaction with human serum albumin

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Abstract:

The interaction between pentobarbital and human serum albumin has been investigated. The basic binding interaction was studied by UV-absorption and fluorescence spectroscopy. From spectral analysis pentobarbital showed a strong ability to quench the intrinsic fluorescence of HSA through a static quenching procedure. The binding constant (k) is estimated at $1.812 \times 10^4 \text{ M}^{-1}$ at 293 K. FT-IR spectroscopy with Fourier self deconvolution technique was used to determine the protein secondary structure and drug binding mechanisms. The observed spectral changes of HSA–pentobarbital complex indicate a larger intensity decrease in the absorption band of α -helix relative to that of β -sheets. This variation in intensity is related indirectly to the formation of H-bonding in the complex molecules, which accounts for the different intrinsic propensities of α -helix and β -sheets.