



Analysis of Binding Interaction Between Antibacterial Ciprofloxacin and Human Serum Albumin by Spectroscopic Techniques.

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Abstract:

The binding of ciprofloxacin (CFX) to human serum albumin (HSA) has been investigated by fluorescence displacement and induced circular dichroism (ICD) measurements. Displacement measurements were performed with CFX in the absence and presence of marker ligands (hemin for domain I, bilirubin for interspace of domain IA and IIA, chloroform for domain II, and diazepam for domain III) to establish CFX binding site in one of the three major domains of HSA. The primary binding site of CFX is located in site I of HSA (domain IIA) in close vicinity to the site where chloroform (CHCl₃) binds. It is depicted from the decrease in quenching constant of HSA-CHCl₃ system $(0.02 \pm 0.06) \times 10^{-3} \text{ L mol}^{-1}$ compared to HSA-CFX-CHCl₃ system $(0.01 \pm 0.06) \times 10^{-3} \text{ L mol}^{-1}$ as obtained by the fluorescence displacement spectroscopy. Furthermore, far-UV CD results show that the binding of CFX leads to change in the helicity of HSA. The ICD results indicated that the CFX binds to the domain IIA of HSA which is in agreement with the fluorescence displacement results.

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