FULL PAPERS

氟胞嘧啶与牛血清白蛋白结合反应研究

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摘要   用荧光光谱和吸收光谱法研究了在模拟人体生理条件下,氟胞嘧啶（5-FC）与牛血清白蛋白(BSA的)结合反应。试验证实氟胞嘧啶有较强地猝灭BSA的荧光强度的能力。分别用Stern-Volmer方程和Lineweaver-Burk双倒数方程等处理试验数据，发现它们属于静态猝灭作用，结合常量为5.710×10^3 L· mol^{-1}；由forster非辐射能量转移理论计算结合位置距212位色氨酸2.49nm；由热力学参数分析其结合力主要是氢键力和范德华力；用同步荧光光谱和三维荧光光谱获得到了BSA构型变化等重要信息。

关键词   氟胞嘧啶,牛血清白蛋白,荧光光谱,三维荧光光谱,热力学参数

分类号

Study on Binding Reaction between Flucytosineand Bovine Serum Albumin

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Abstract The binding of flucytosine to bovine serum albumin (BSA) was studied by means of fluorescence and absorption spectra under the conditions of simulant clay physiology. It showed a powerful ability to quench the fluorescence launching from BSA. After analyzing the fluorescence quenching data by Stern-Volmer equation and Lineweaver-Burk double-reciprocal equation, it was found that they matched the latter better and so they belonged to static quenching. The binding constant was calculated to be 5.710×10^3 L·mol^{-1} at 297 K. The binding locality was a distance 2.49 nm away from tryptophan residue-212 based on Förster's non-radiation energy transfer mechanism. The binding power is mainly the hydrogen bond and van der Waals force according to the thermodynamic parameters. The information of BSA conformation was acquired by synchronous fluorescence spectrum and three-dimensional fluorescence spectrum.

Key words   flucytosine   bovine serum albumin   fluorescence spectroscopy   three-dimensional fluorescence spectrum   thermodynamic parameter

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