

研究快报

全甲基及其多胺修饰环糊精与牛血清白蛋白的相互作用

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摘要 制备了两个多胺修饰全甲基化环糊精, 即单-[6-(乙二胺)-6-脱氧]-七-(2,3,6-三甲氧基)- β -环糊精(4)和单-[6-(二乙烯三胺)-6-脱氧]-七-(2,3,6-三甲氧基)- β -环糊精(5), 并采用荧光和紫外-可见光谱方法测定了全甲基化环糊精及其多胺修饰衍生物在磷酸缓冲溶液中(25 °C, pH=7.2)与牛血清白蛋白形成化学计量比为8:1的超分子配合物的稳定常数。结果表明, 全甲基化环糊精对牛血清白蛋白具有强于天然环糊精和部分甲基化环糊精的分子键合能力, 而经过多胺修饰的全甲基化环糊精衍生物则显示了更强的键合能力, 这些强的键合能力源于疏水作用、静电作用和氢键作用的协同效应。

关键词 [全甲基化环糊精衍生物](#) [光谱滴定](#) [牛血清白蛋白](#) [超分子化学](#)

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Synthesis of Oligo(ethylenediamino) Modified Permethylated- β -cyclo-dextrins and Their Interactions with Bovine Serum Albumin

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Abstract Two oligo(ethylenediamino) mono-modified permethylated- β -cyclodextrins were prepared, and the complex stability constants for the 8:1 complexation of some permethylated β -cyclodextrin derivatives with bovine serum albumin were determined by fluorescence and UV-Vis spectroscopy at 25 °C in phosphate buffer solution(pH=7.2). The results indicate that the permethylated β -cyclodextrin shows obviously enhanced binding ability as compared with native β -cyclodextrin and 2,6-methylated β -cyclodextrin, and the oligo(ethylenediamino) modified permethylated β -cyclodextrin derivatives show much stronger binding abilities. The enhanced binding ability can be derived from the cooperative effect of hydrophobic, electrostatic and hydrogen bonding interactions.

Key words [Permethylated \$\beta\$ -cyclodextrin derivative](#) [Spectral titration](#) [Bovine serum albumin\(BSA\)](#) [Supramolecular chemistry](#)

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