

研究论文

丁二酮肟双核铜配合物与DNA相互作用的电化学研究

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收稿日期 2006-1-6 修回日期 网络版发布日期 2006-12-28 接受日期

**摘要** 用电化学方法研究了丁二酮肟双核铜配合物[Cu<sub>2</sub>(Hdmg)<sub>4</sub>]与DNA的相互作用. 考察了pH、温度、离子强度和配合物浓度等因素对配合物与DNA相互作用的影响, 初步探讨了配合物与DNA相互作用的机理. 实验结果表明, 配合物与DNA的碱基结合形成非电活性物质, 使溶液中游离配合物的浓度降低, 配合物的峰电流减小. 单链DNA(ssDNA)充分暴露的碱基使其与配合物的结合能力大于双链DNA(dsDNA). Cu<sub>2</sub>(Hdmg)<sub>4</sub>与ssDNA和dsDNA的结合比分别为2:1和1:1, 结合常数分别为3.56×10<sup>9</sup>和2.75×10<sup>5</sup>.

**关键词** [双核铜配合物](#) [丁二酮肟](#) [DNA](#) [循环伏安法](#) [相互作用](#)

**分类号** [O657.1](#)

**DOI:**

Electrochemical Studies on Interaction Between Dinuclear Copper(II) Complex Containing Dimethylglyoxime and DNA

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Received 2006-1-6 Revised Online 2006-12-28 Accepted

**Abstract** Cyclic voltammetry was used to study the interaction between dinuclear copper(II) complex containing dimethylglyoxime[Cu<sub>2</sub>(Hdmg)<sub>4</sub>] and DNA. The influences of pH, temperature, ionic strength and concentration of Cu<sub>2</sub>(Hdmg)<sub>4</sub> on the interaction were described, and the mechanism of the interaction was also discussed. The result shows that Cu<sub>2</sub>(Hdmg)<sub>4</sub> can interact with the bases of DNA to form non-electroactive complex, which can decrease the anodic peak current of Cu<sub>2</sub>(Hdmg)<sub>4</sub>. The interaction between Cu<sub>2</sub>(Hdmg)<sub>4</sub> and ssDNA is stranger than that between Cu<sub>2</sub>(Hdmg)<sub>4</sub> and dsDNA because of the exposed bases of ssDNA. The combining ratios of Cu<sub>2</sub>(Hdmg)<sub>4</sub> to ssDNA and to dsDNA are 2:1 and 1:1, and the combining constants 3.56×10<sup>9</sup> and 2.75×10<sup>5</sup>, respectively.

**Key words** [Dinuclear copper\(II\) complex](#); [Dimethylglyoxime](#); [DNA](#); [Cyclic voltammetry](#); [Interaction](#)

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