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铕(III)离子与人血清脱铁转铁蛋白结合的紫外差光谱研究

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摘要 在pH7.4,温度为25℃的条件下,
用紫外吸收差光谱进行了Eu^3^+对人血清脱铁转铁蛋白的滴定。结果表明Eu^3^+与人血清脱铁转铁蛋白结合后其差光谱在245nm和296nm处出现吸收峰,在245nm处,Eu^3^+-脱铁转铁蛋白配合物的摩尔吸光系数是(2.2±0.1)×10^4cm^-^1.mol^-^1.dm^3,Eu^3^+可占据脱铁转铁蛋白的2个金属离子结合部位,Eu^3^+优先占据脱铁转铁蛋白的C端结合部位,
条件平衡常数是logK~C=8.42±0.12,logK~N=6.03±0.42。Eu^3^+与R~E^3^+(R~E=Nd,Sm,Gd和Tb)间的线性自由能关系表明,
稀土离子占据脱铁转铁蛋白的C端结合部位时受离子大小的影响。

关键词 铕离子 人血清转铁蛋白 紫外差示光谱

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UV difference spectra study on the binding of europium ion with apotransferrin

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Abstract The binding of Eu^3^+ to human serum apotransferrin has been studied by monitoring the change of difference UV spectra at 245nm. Conditional equilibrium constants for the complexation of Eu^3^+ by human serum apotransferrin in 0.1mol.dm^-^3 hepes, pH7.4, at 25℃ have been measured. The results are logK~C=8.42±0.12, logK~N=6.03±0. 42 for complexation of Eu^3^+. The molar absorptivity per binding site for Eu^3^+ is (2.2±0.1)×10^4cm^-^1.mol^-^1.dm^. Titration of both C and N terminal monoferric transferrins with Eu^3^+ indicate that Eu^3^+ binding is stronger at the C therminal binding site than the N terminal binding site. Linear free energy relationships for Eu^3^+ and R~E^3^+ (R~E=Nd, Sm, Gd and Tb) have been established. There is a size restriction for the binding of lanthanide ions on C terminal binding site of apotransferrin.

Key words EUROPIUM ION

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