

研究论文

**Cu<sup>2+</sup>和铜锌超氧化物歧化酶作用的光谱学研究**

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**摘要** 利用邻苯三酚自氧化法监测在磷酸盐缓冲体系中Cu<sup>2+</sup>对猪肝铜锌超氧化物歧化酶(CuZnSOD)活力的影响, 认为Cu<sup>2+</sup>与猪肝CuZnSOD存在直接相互作用. 通过荧光光谱方法研究了这种相互作用, 内源荧光的猝灭实验表明Cu<sup>2+</sup>与CuZnSOD形成1: 1型稳定配合物; 荧光猝灭的动力学分析表明配合物形成过程由两个独立步骤完成: 第一步是双分子快速缔合过程, 形成了结合疏松的配合物, 第二步是单分子慢速过程, 即松散的配合物“异构化”成为结合紧密的配合物. FTIR和CD证实相互作用过程伴随了蛋白分子构象的变化.

**关键词** [铜锌超氧化物歧化酶](#) [荧光光谱](#) [Cu<sup>2+</sup>](#) [猪肝](#)

分类号

**Study on Interaction Between Copper Ion and Hog Liver CuZnSOD by Spectroscopy**

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**Abstract** The influence of copper ion on enzyme activity of hog liver copper zinc superoxide dismutase (CuZnSOD) was monitored by using the pyrogallol autoxidation inhibition assay. The direct interaction of copper ion with CuZnSOD was studied by fluorescence spectroscopy, and a type of 1: 1 stable complex has been generated, which was certified by the quenching experiment of intrinsic fluorescence. The process of the generated complex shown by dynamic analysis of fluorescence quenching, consisted of two steps, in which the first step was a quick association process of double molecules to generate a loose complex, and the second step was a slow process of single molecule, where the loose complex was isomerized into the compact complex. The change of enzyme conformation was due to the binding of Cu<sup>2+</sup> to SOD, which was confirmed by FTIR and CD spectra.

**Key words** [CuZnSOD](#) [fluorescence spectroscopy](#) [copper ion](#) [hog liver](#)

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