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论文

DNA存在下Cu(Ⅱ)—去甲斑蝥酸络合物催化抗坏血酸氧化的动力学

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摘要:

在pH 7.40,20.00±0.05℃,磷酸盐缓冲液中,研究了Cu(Ⅱ)及Cu(Ⅱ)络合物的可见光谱,以及DNA存在下,Cu(Ⅱ)的去甲斑蝥酸络合物Cu(Ⅱ)/H_2DCA催化抗坏血酸(H_2A)有氧氧化动力学,检测了Cu(Ⅱ)/H_2DCA催化H_2A有氧氧化过程中·OH生成的速度。实验结果表明,在Cu(Ⅱ)/H_2DCA存在下,抗坏血酸断裂DNA链的反应体系中,存在Cu(Ⅱ)与H_2DCA和DNA的三元络合。据此,推测H_2A的催化有氧氧化对DNA链的断裂作用按特定部位的Fenton反应机理进行。该机理能够解释前文的DNA链断裂实验的所有结果。

关键词: 有氧氧化动力学 抗坏血酸 Cu(Ⅱ)—去甲斑蝥酸络合物 DNA断裂作用 Fenton反应

THE KINETICS OF ASCORBIC ACID OXIDATION CATALYZED BY Cu(Ⅱ)/H_2DCA IN THE PRESENCE OF DNA

PH Li;QH Chen;YH Pang

Abstract:

In phosphate buffer (pH 7. 40), at 20. 00 ±0. 05 ℃, the visiblespectra of Cu (Ⅱ) and Cu (Ⅱ) complexes and the kinetics of ascorbic acid oxidationcatalyzed by Cu (Ⅱ)/H_2DCA in the presence of DNA were studied. Measurements were re-ported on rate of ·OH formation by the oxidation of ascorbic acid in the presence ofCu (Ⅱ)/H_2DCA. It showed that ternary complex Cu(Ⅱ)/$_2$DCA/DNA may exist in thesystem in which DNA strand was broken by ascorbic acid in the presence of Cu (Ⅱ) /H_2DCA, and it was assumed that the DNA- breaking action of ascorbic acid in the pre-sence of Cu (Ⅱ)/H_2DCA conformed to site-specific Fenton reaction mechanism. All the re-suit of DNA-breaking action can be explained in terms of this site-specific Fentonreaction, mechanism.

Keywords: QH Chen YH Pang PH Li

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