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农产品辐照研究·食品科学

高密度CO<sub>2</sub>处理对*E. coli*细胞膜渗透性的影响

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摘要:

以*E. coli*菌悬液为研究对象,通过测定高密度CO<sub>2</sub>处理(DPCD)后*E. coli*上清液中蛋白质、核酸、Mg<sup>2+</sup>、K<sup>+</sup>离子和丙二醛的含量,辅助透射电镜观察,研究DPCD对*E. coli*细胞膜渗透性的影响。在7MPa、37℃条件下,*E. coli*经高密度CO<sub>2</sub>处理10min后,99%以上的*E. coli*失活,同时研究发现蛋白质、核酸及Mg<sup>2+</sup>、K<sup>+</sup>离子等胞内物质均发生了不同程度的泄漏,丙二醛含量增加,*E. coli*胞内物质密度降低。密度CO<sub>2</sub>处理造成*E. coli*细胞膜渗透性的增加,这也是导致*E. coli*死亡的原因之一。

关键词: 高密度CO<sub>2</sub> *E. coli* 细胞膜渗透性

## EFFECT OF DENSE PHASE CARBON DIOXIDE ON MEMBRANE PERMEABILIZATION OF *E. coli*

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Abstract:

To study the effects of dense phase carbon dioxide (DPCD) on membrane permeability of *E. coli*, the content of protein, nucleic acid, Mg<sup>2+</sup>, K<sup>+</sup> and malondialdehyde (MDA) of *E. coli* were studied coupled with Transmission Electron Micrographs (TEM) technique. Under the DPCD condition of 7MPa, 37℃ for 10min, 99% of *E. coli* was inactivated. After DPCD treatment, proteins, nucleic acid and Mg<sup>2+</sup>, K<sup>+</sup> leaked from cells, and the content of MDA increased and the density of substances inside the cell decreased through the TEM view. The results indicated that DPCD treatment caused the membrane permeability of *E. coli* increased which was also an important cause of cell death.

Keywords: dense phase carbon dioxide *E. coli* membrane permeabilization

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