原子能科学技术 2011 45 (7): 875-879 ISSN: 1000-6931 CN: 11-2044/TL

技术及应用

γ辐照对枯草芽孢杆菌营养体的损伤

陈晓明[1];柳芳[1];郑春[2,*];李晓燕[2];张建国[1];严万里[1]

1.西南科技大学 生命科学与工程学院，四川 绵阳621010 2.中国工程物理研究院 核物理与化学研究所，四川 绵阳621900

收稿日期 修回日期 网络版发布日期:

摘要 选用不同剂量γ射线辐照枯草芽孢杆菌营养体，分别用细胞计数、黄嘌呤氧化及脉冲场凝胶电泳法分析了辐照后的细胞存活率、胞内SOD活性及细胞DNA双链断裂水平。研究发现，随着γ辐照吸收剂量的增大，细胞存活率不断下降；SOD活性随剂量的变化无明显的规律；DNA双链断裂水平与细胞存活率密切相关，DNA的释放百分比和断裂水平值随辐照剂量增加而不断增大。结果表明：γ辐照对枯草芽孢杆菌营养体有较高的灭活能力，其损伤效果可能与SOD活性及双链断裂相关。

关键词 γ辐照 SOD活性 双链断裂 辐照灭菌

分类号

Damage Effect of γ-rays on *Bacillus Subtilis* Vegetetive Cells

CHEN Xiao-ming[1];LIU Fang[1];ZHENG Chun[2,*];LI Xiao-yan[2];ZHANG Jian-guo[1];YAN Wan-li[1]

1.School of Life Science and Engineering, Southwest University of Science and Technology, Mianyang 621010, China; 2.Institute of Nuclear Physics and Chemistry, China Academy of Engineering Physics, Mianyang 621900, China

Abstract In order to investigate the damage effects of γ-rays at cell and molecular level, *Bacillus subtilis* vegetative cells were irradiated by ^{60}Co γ-rays at different absorbed doses. The cell survival rate was examined with the standard plate-count method. The intracellular SOD activity was measured by SOD kit through xanthine oxidase method. DNA double-strand breaks were analyzed by pulsed-field gel electrophoresis (PFGE). The cell survival rate decreases when γ-rays dose increases. A clear relation could not be found between intracellular SOD activity and absorbed dose. The DNA release percentage value and break level value increase obviously with γ-rays dose. Cell survival rate is related to DNA double-strand breaks level. It can be concluded that γ-rays have obviously damage effect on *Bacillus subtilis* vegetative cell, and the damage effect changes with SOD activity and DSB.

Key words γ radiation SOD activity _ double-strand break irradiation sterilization

DOI

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