

论文

He-Ne激光辐照铁棍山药贮藏保鲜的研究

魏山城<sup>1</sup>;许安涛<sup>2</sup>;张瑞瑞<sup>1</sup>;赵喜亭<sup>3</sup>;周晓艳<sup>1</sup>

1.河南师范大学物理与信息工程学院,河南新乡453007; 2.焦作师范高等专科学校物理系,河南焦作454001; 3.河南师范大学生命科学学院,河南新乡453007

摘要:

用工作波长632.8nm、功率为2.5mW的He-e激光器辐照铁棍山药,30min后,其芦头芽萌发受抑,山药茎含水量、可溶性总糖和可溶性蛋白含量分别从70.2039%下降到66.61544%、从72.21325mg·g<sup>-1</sup>下降到25.87888mg·g<sup>-1</sup>、从508.5394μg·g<sup>-1</sup>下降到258.4231μg·g<sup>-1</sup>,丙二醛(MDA)和超氧阴离子含量分别从0.62mmol·g<sup>-1</sup>变为8.033122mmol·g<sup>-1</sup>、从32.99713μg·g<sup>-1</sup>变为35.53642μg·g<sup>-1</sup>,贮藏前期的超氧化物歧化酶(SOD)活性从494.864U·g<sup>-1</sup>变为1105.85U·g<sup>-1</sup>,贮藏后期的SOD活性从1105.85U·g<sup>-1</sup>变为959.167U·g<sup>-1</sup>。

关键词: 激光辐照; 铁棍山药; 贮藏品质; 膜脂过氧化

Storage of Tiegun dioscorea opposita thunb by He-e laser irradiation

WEI Shan-cheng<sup>1</sup>; XU An-tao<sup>2</sup>; ZHANG Rui; rui<sup>1</sup>; ZHAO Xi-ting<sup>3</sup>; ZHOU Xiao-yan<sup>1</sup>

1.College of Physics & Information Engineering, Henan Normal University, Xinxiang 453007, China;  
2. Department of Physics, Jiaozuo Teachers College, Jiaozuo 454001, China;  
3. College of Life Science, Henan Normal University, Xinxiang 453007, China

Abstract:

The Lo bud germination inhibition of Tiegun dioscorea opposita thunb occurred, the yam stem water content, total soluble sugar and soluble protein content respectively declined from 70.2039% to 66.61544%, from 72.21325mg·g<sup>-1</sup> to 25.87888mg·g<sup>-1</sup> and from 508.5394μg·g<sup>-1</sup> to 258.4231μg·g<sup>-1</sup>, and MDA and O<sub>2</sub> contents respectively increased from 0.62mmol·g<sup>-1</sup> to 8.033122mmol·g<sup>-1</sup> and from 32.99713μg·g<sup>-1</sup> to 35.53642μg·g<sup>-1</sup> after it was irradiated by 2.5mW He-e laser for 30min. After the laser irradiation, the superoxide dismutase (SOD) activity of Tiegun dioscorea opposita thunb increased from 494.864U·g<sup>-1</sup> to 1105.85U·g<sup>-1</sup> in the initial period of its storage and then declined from 1105.85U·g<sup>-1</sup> to 959.167U·g<sup>-1</sup>.

Keywords: laser irradiation Tiegun dioscorea opposita thunb storage quality lipid peroxidation

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: 魏山城(1952-),男,河南郑州人,教授,主要从事非线性光学和光纤传感器研究工作。

作者简介:

参考文献:

[1] 李剑平,陈冰泉.漫射近似在测量生物组织光学性质中的适用范围[J].应用光学,2007,28(6):756-759.  
LI Jian-ping,CHEN Bing-quan. Measurement of carbon content in coal with laser-induced breakdown spectroscopy [J]. Journal of Applied Optics,2007,28(6):756-759.(in Chinese with an English abstract)  
[2] 陈殿华.中国辐照食品的产业化发展[J].核农学报,2004,18(2):81-88.  
CHEN Dian-hua. Industrialization development of food irradiation in China [J]. Acta Agriculturae Nucleatae Sinica, 2004,18(2):81-88. (in Chinese with an English abstract)  
[3] 陈艳乐,贾守菊,肖化层,等.温州薯蕷贮藏期间生理生化指标的变化[J].河南科学,2004,22(3):356-359.  
CHEN Yan-le,JIA Shou-ju, XIAO Hua-ceng,et al.Changes of biophysiological and biochemical indicators of dioscorea of Wenzhou during storage [J]. Henan Science, 2004,22(3):356-359. (in Chinese with an English abstract)

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(1330KB)
- ▶ [HTML全文]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 激光辐照; 铁棍山药; 贮藏品质; 膜脂过氧化

本文作者相关文章

- ▶ 魏山城
- ▶ 许安涛
- ▶ 张瑞瑞
- ▶ 赵喜亭
- ▶ 周晓艳

[4] 高俊风. 植物生理学实验技术 [M]. 西安: 世界图书出版公司.2000.  
GAO Jun-feng. Plant Physiology experimental technology [M]. Xi'an: World Book Publishing Company.2000. (in Chinese with an English abstract)

[5] 张宪政,陈风玉,王荣富. 植物生理学实验技术 [M]. 沈阳: 辽宁科学技术出版社,1994.  
ZHANG Xian-zheng, CHEN Feng-yu, WANG Rong-fu. Plant physiology experimental technology [M]. Shenyang: Liaoning Science and Technology Publishing Company. 1994. (in Chinese)

[6] 王爱国,罗广华. 植物的超氧化物自由基与羟氨反应的定量关系 [J]. 植物生理学通讯,1990,26(6):55-57.  
WANG Ai-guo, LUO Guang-hua. Superoxide free radical of plants and hydroxyl reaction of quantitative reaction [J]. Plant Physiology Aviso, 1990,26(6):55-57. (in Chinese with an English abstract)

[7] 邓碧玉,袁勤生,李文杰. 改良的联苯三酚自氧化测定超氧化物歧化酶活性的方法 [J]. 生物化学与生物物理进展, 1991,18(2):163-164.  
DENG Bi-yu, YUAN Qin-sheng, LI Wen-jie. The method of improved biphenyl triphenol autooxidation determines activity of superoxide dismutase [J]. Biochemistry and Biophysics Progress, 1991,18(2):163-164. (in Chinese without an English abstract)

[8] 赵喜亭,王会珍,周娜,等. CaCl<sub>2</sub>对铁棍山药块茎采后几种与膜脂过氧化相关的生理指标的影响 [J]. 植物生理学通讯,2006,42(6):1077-1080.  
ZHAO Xi-ting, WANG Hui-zhen, ZHOU Na, et al. Effects of CaCl<sub>2</sub> on several physiological indexes related with membrane lipid peroxidation of postharvest yam (*dioscorea opposita thunb. cv. tiegun*)tuber [J]. Plant Physiology Communications, 2006,42(6):1077-1080. (in Chinese with an English abstract)

[9] PE-REZ M B, AVELDANO M I, CROCI C A. Growth in hibition by gamma rays affects lipids and fatty acids in garlic sprouts during storage [J]. Postharcest Biol. Technol., 2007,44(2):122-130.

[10] 王守经,于子厚,邹积万,等. 辐照生姜的贮藏性状研究 [J]. 核农学报,2004,18(1):26-29.  
WANG Shou-jing,YU Zi-hou, ZOU Ji-wan, et al.Study on the storage properties of irradiated ginger [J]. Acta Agriculturae Nucleatae Sinica, 2004,18(1):26-29. (in Chinese with an English abstract)

本刊中的类似文章

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text" value="9697"/>