

农产品辐照研究·食品科学

高能电子束辐照对鲜切哈密瓜生理生化品质的影响

周任佳^{1,2}, 乔勇进², 王海宏², 陈召亮²

1. 上海理工大学医疗器械与食品学院, 上海 200093;
2. 上海市农业科学院农产品保鲜加工研究中心, 上海 201403

摘要:

通过0.5、1.0、1.5和2.0kGy剂量的电子束辐照处理鲜切哈密瓜,采用聚丙烯(PP)材质托盘和聚乙烯(PE)保鲜膜包装,置于5℃,相对湿度85%~95%的冷库中贮藏,研究高能电子束辐照对鲜切哈密瓜生理生化品质的影响。结果表明,电子束辐照能显著降低呼吸速率,显著抑制Vc、可溶性固形物的含量的下降,减少丙二醛积累,降低多酚氧化酶和过氧化物酶活性,并提高苯丙氨酸解氨酶活性。1.5kGy辐照处理的鲜切哈密瓜在贮藏至第13天时,感官品质保持良好。综合电子束辐照对鲜切哈密瓜的保鲜效果,确定最佳处理剂量为1.5kGy。

关键词: 高能电子束 辐照 鲜切哈密瓜 品质

EFFECT OF HIGH-ENERGY ELECTRON BEAM IRRADIATION ON PHYSIOLOGICAL QUALITY OF FRESH-CUT *Hami* MELON

ZHOU Ren-jia^{1,2}, QIAO Yong-jin², WANG Hai-hong², CHEN Zhao-liang²

1. Department of Food Science, School of Medical Instrument and Food Engineering, University of Shanghai for Science and Technology, Shanghai 200093;
2. Agricultural Products Storage and Procesings Research Center, Shanghai Academy of Agriculture Science, Shanghai 201403

Abstract:

To investigate the effects of high-energy electron beam irradiation on physiological quality of fresh-cut *Hami* melon, 0.5, 1.0, 1.5 and 2.0kGy electron beam were chosen to irradiate the fresh-cut *Hami* melon which were packaged in plates in PP material and 0.03mm PE film. After irradiation, the samples were stored at the conditions of 5℃ and RH 85%~95%. The results showed that irradiation could significantly decrease the respiration rate of the hami -melon, retard the decreasing of Vc and soluble solids contents, reduced the accumulation of MDA, activity of PPO and POD, and increased the activity of PAL. After 13d storage, the fresh-cut *Hami* melon irradiated at 1.5kGy was still good in sensory quality. According to the results, 1.5kGy should be the optimal irradiation dose of fresh-cut *Hami* melon.

Keywords: high-energy electron beam irradiation fresh-cut *Hami* melon quality

收稿日期 2011-09-28 修回日期 2011-11-17 网络版发布日期

DOI:

基金项目:

上海市西甜瓜产业体系(2011-2015)

通讯作者: 乔勇进(1967-),男,山东滨州人,博士,研究员,主要研究方向为农产品加工与保鲜。E-mail: yjqiao2002@sohu.com

作者简介:

作者Email: yjqiao2002@sohu.com

参考文献:

- [1] 董全. 鲜切果蔬的加工工艺和保鲜技术[J]. 四川食品与发酵, 2002, 2: 31-35
- [2] 廖小军, 胡小松. 果蔬的“最少加工处理”研究现状[J]. 食品与发酵工业, 1998, 24(6): 39-48
- [3] 孙惠泽. 切割果蔬菜在加工、流通过程中的品质保持技术[J]. 食品科学, 1991, 222-24
- [4] Bico S L S, Raposo M F J, Morais R M S C. Combined effects of chemical dip and/or carrageenan coating and/or controlled atmosphere on quality of fresh-cut banana[J]. Food Control, 2009, 20: 508-514

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(2106KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 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

- ▶ 高能电子束
- ▶ 辐照
- ▶ 鲜切哈密瓜
- ▶ 品质

本文作者相关文章

- ▶ 周任佳
- ▶ 乔勇进
- ▶ 王海宏
- ▶ 陈召亮

PubMed

- ▶ Article by ZHOU Ren-jia
- ▶ Article by QIAO Yong-jin
- ▶ Article by WANG Hai-hong
- ▶ Article by CHEN Zhao-liang

- [5] María Victoria Selma, Ana María Ibáñez, Marita Cantwell. Reduction by gaseous ozone of Salmonella and microbial flora associated with fresh-cut cantaloupe[J]. Food Microbiology, 2008, 25: 558-565
- [6] Jorge M. Fonseca, James W. Rushing. Effect of ultraviolet-C light on quality and microbial population of fresh-cut watermelon[J]. Postharvest Biology and Technology, 2006, 40: 256-261
- [7] Maria Emilia Latorre, Patricia Narvaiz, Ana María Rojas. Effects of gamma irradiation on bio-chemical and physico-chemical parameters of fresh-cut red beet root[J]. Journal of Food Engineering, 2010, 98: 178-191
- [8] Palekar M P, Cabrera-Diaz E, Kalbasi-Ashtari A. Effect of electron beam irradiation on the bacterial load and sensorial quality of sliced cantaloupe[J]. Food microbiology and Safety, 2004, 69(9): 267-273
- [9] 陈召亮,方强,王海宏,乔勇进.电子束辐照对鲜切西洋芹的保鲜效应[J].上海农业学报,2010,26(2):9-13
- [10] 李合生.植物生理生化实验原理和技术[M].北京:高等教育出版社,2001
- [11] Vina S Z, Chaves A S. Antioxidant responses in minimally processed celery during refrigerated storage[J]. Food Chemistry, 2006, 94(1): 68-74
- [12] Galeazzi M A M, Sgarbieri V C, Constantinides S M. Isolation, purification and physicochemical characterization of polyphenoloxidase (PPO) from dwarf variety of banana (Musa cavendishii, L)[J]. Food Science, 2006, 46(1): 150-155
- [13] Tan B K, Harris N D. Maillard products inhibit apple polyphenoloxidase[J]. Food Chemistry, 1995, 53(3): 267-273
- [14] Aguayo E, Jansasithorn R, Kader A A. Combined effects of 1-methylcyclopropene, calcium chloride dip, and/or atmospheric modification on quality changes in fresh-cut strawberries[J]. Postharvest Biology and Technology, 2006, 40: 269-278
- [15] 哈益明.辐照食品及其安全性[M].北京:化学工业出版社,2006
- [16] 王秋芳,陈召亮,乔勇进,王海宏.高能电子束辐照对巨峰葡萄保鲜效果的研究[J].核农学报,2010,24(2):319-324
- [17] Bryan B B, Bruce A W, Charles A Sims. Effects of low-dose electron beam irradiation on respiration, microbiology, texture, color, and sensory characteristics of fresh-cut cantaloupe store modified-atmosphere packages[J]. Journal of Food Science, 2006, 71(2): 149-155
- [18] 丘泉发.荔枝辐照保鲜试验研究[J].核农学通报,1997,18(1):18-20
- [19] 江昌俊,余有本.苯丙氨酸解氨酶的研究进展[J].安徽农业大学学报,2001,28(4):425-430

本刊中的类似文章

1. 黄焱,李方,柴明良,夏宜平,陈昆松. $^{60}\text{Co}\gamma$ 对春兰根状茎染色体倍性及相关酶活性的影响[J].核农学报,2009,23(6):971-975
2. 王瑞静,王瑞文,沈宝仙. $^{60}\text{Co}\gamma$ 射线对杨树种子的辐射效应[J].核农学报,2009,23(5):762-765
3. 周柱华,徐立华,王丽丽,许方佐,邢燕菊,张凤云,邱登林,阴卫军,韩金龙,徐相波,丁一.玉米自交系鲁原92的选育及应用[J].核农学报,2009,23(6):986-989
4. 苏家乐,李畅,姜维华,刘晓青,陈璐.6个一品红品种对 $^{60}\text{Co}\gamma$ 辐照敏感性研究[J].核农学报,2009,23(6):990-993
5. 刘春泉,刘春菊,宋江峰,李大婧,冯敏,朱佳廷.辐照杀菌对核桃粉品质的影响[J].核农学报,2009,23(5):825-828
6. 刘波,柯才焕,曾志南. γ 射线对日本囊对虾生物学效应的初步探讨[J].核农学报,2009,23(5):829-832
7. 鲍正发,段智英,赵海军,夏英武,吴殿星.空间诱变引起水稻9311的品质变异[J].核农学报,2004,18(04):272-275
8. 刘春泉,朱佳廷,赵永富,张卫东,金宇东,季萍,严晓明.冷冻虾仁辐照保鲜研究[J].核农学报,2004,18(03):216-220
9. 劳华均,傅俊杰.辐照灭菌对鲑鱼品质的影响[J].核农学报,2004,18(03):225-227
10. 江枝和,翁伯琦,肖淑霞,林勇,黄挺俊. $^{60}\text{Co}\gamma$ 射线辐照姬松茸孢子对其子实体脂肪酸含量的影响[J].核农学报,2004,18(03):228-229+211
11. 包建忠,陈秀兰,翟建青,曹宏.辐照加工货源问题的探讨[J].核农学报,2004,18(03):230-232
12. 陈殿华.中国辐照食品产业化发展[J].核农学报,2004,18(02):81-88
13. 吴关庭,胡张华,陈笑芸,郎春秀,陈锦清,夏英武.高羊茅辐射敏感性和辐照处理对其成熟种子愈伤诱导的影响[J].核农学报,2004,18(02):104-106+112
14. 强继业,陈宗瑜,郭世昌. $^{60}\text{Co}\gamma$ 射线处理花卉后M₂代生理特性变化对小气候要素的响应[J].核农学报,2004,18(02):107-109+124
15. 江枝和,翁伯琦,林勇,黄挺俊,肖淑霞. $^{60}\text{Co}\gamma$ 射线辐照姬松茸孢子对子实体氨基酸含量的影响[J].核农学报,2004,18(02):110-112