

## 高氧处理抑制草莓果实采后腐烂与抗病性诱导的关系

### Inhibition of postharvest decay in relation to induced disease resistance of strawberry fruit treated with high oxygen

投稿时间: 2005-12-13 最后修改时间: 2006-4-17

稿件编号: 20061046

中文关键词: 草莓; 高氧处理; 果实腐烂; 诱导抗病性; 总酚

英文关键词: strawberry fruit; high oxygen treatment; fruit decay; induced disease resistance; total phenolics

基金项目: 国家自然科学基金资助项目(30170661)

作者	单位
陈学红	(1975-), 女, 主要从事食品贮藏加工研究。南京南京农业大学食品科技学院, 210095
郑永华	男, 博士, 教授, 博士生导师, 从事农产品贮藏加工研究。南京南京农业大学食品科技学院, 210095。 Email: zhengyh@njau.edu.cn
杨震峰	南京农业大学食品科技学院, 南京 210095
曹士锋	南京农业大学食品科技学院, 南京 210095
李娜	南京农业大学食品科技学院, 南京 210095
马素娟	南京农业大学食品科技学院, 南京 210095

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中文摘要:

为探索高氧处理抑制果实腐烂与抗病性诱导的关系, 本试验研究了60%和100% O<sub>2</sub>及空气处理对草莓果实5℃ 15 d冷藏及后续20℃空气中1 d货架存放期间果实腐烂和抗病相关酶活性变化的影响。结果表明, 高氧处理能有效抑制草莓冷藏期间果实腐烂的发生, 诱导总酚含量的增加, 提高苯丙氨酸解氨酶、多酚氧化酶、几丁质酶、β-1, 3-葡聚糖酶活性。经高氧处理冷藏15 d后的草莓果实转移到20℃空气中1 d货架存放期间, 果实腐烂仍受到明显抑制, 同时保持较高的总酚含量和较高的苯丙氨酸解氨酶和多酚氧化酶活性。100% O<sub>2</sub>对腐烂的抑制作用大于60% O<sub>2</sub>处理。这些结果表明, 高氧抑制草莓果实的腐烂与抗病相关酶活性的升高密切相关, 抗病性诱导是高氧抑制草莓果实腐烂的重要原因。

英文摘要:

Strawberry (*Fragaria ananassa*, Duch cv. FengXiang) fruits were stored in 60% O<sub>2</sub> or 100% O<sub>2</sub> or air (control) at 5℃ for up to 15 days following with one day shelf period in air at 20℃ to investigate the effects of high oxygen treatments on the decay control and its relation to the induction of disease resistance. Results indicate that the treatments with 60% O<sub>2</sub> or 100% O<sub>2</sub> significantly inhibit decay incidence, maintain higher levels of phenylalanine ammonium-lyase, polyphenol oxidase, chitinase and β-1, 3-glucanase activities and total phenolic content during storage at 5℃. When the fruits are removed from the high oxygen atmospheres and hold for additional one day in air at 20℃, fruits treated with 60% O<sub>2</sub> or 100% O<sub>2</sub> also have significantly less decay rate and higher levels of phenylalanine ammonium-lyase and polyphenol oxidase activities and total phenolic content. 100% O<sub>2</sub> treatment is more effective in controlling fruit decay than 60% O<sub>2</sub> treatment. These results suggest that the inhibition of fruit decay by high oxygen treatment is related to the induction of defensive enzyme activities. The induced disease resistance may be involved in the mechanisms by which high oxygen treatment can inhibit fruit decay in strawberry fruit.

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服务热线：010-65929451 传真：010-65929451 邮编：100026 Email: tcsae@tcsae.org

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