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## 高CO<sub>2</sub>冲击处理对采后蓝莓生理代谢及品质的影响

### Effects of high CO<sub>2</sub> shock treatment on physiological metabolism and quality of postharvest blueberry fruits

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英文关键词: [physiology](#) [quality control](#) [storage](#) [postharvest blueberry fruits](#) [high CO<sub>2</sub> shock treatments](#)

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#### 中文摘要:

为了解高CO<sub>2</sub>处理对采后蓝莓果实生理代谢的影响及其作用机制,该试验采用体积分数为99.9%的高CO<sub>2</sub>处理蓝莓果实48、96和144 h,然后装入聚乙烯薄膜袋后松扎口,贮藏于1℃下。贮藏期间,分析测定了果实风味指数、呼吸速率、腐烂率、呼吸商、果肉乙醇含量和pH值、果实硬度以及与自由基形成和清除相关的多酚氧化酶(PP O)、过氧化物酶(POD)、过氧化氢酶(CAT)和脂氧合酶(LOX)等酶活性。结果表明,高CO<sub>2</sub>处理48 h和96 h降低了蓝莓果肉的pH值,有效控制了腐烂率,保持了较高的果实硬度,诱导了POD活性升高并使LOX活性维持在较低水平,从而降低了蓝莓果实的呼吸速率,并使有效贮藏期延长到50 d左右。144 h的高CO<sub>2</sub>处理对果实造成不可逆伤害,导致无氧呼吸发生,诱发了果实异味产生以及腐烂率的增加。研究结果表明,高CO<sub>2</sub>短时冲击用于采后蓝莓果实贮前的“休克冲击”处理,具有抑制果实生理代谢和保持品质的保鲜效果。

#### 英文摘要:

In order to explore the effects of high CO<sub>2</sub> on physiological metabolism of postharvest blueberry fruits as well as the mechanism, fresh blueberry fruits were put in 99.9% CO<sub>2</sub> condition for 48 h, 96 h and 144 h, respectively. Then the fruits were moved into a polyethylene film bag with a slackened tie storage at 1℃. During the period of storage, fruit flavor index, respiration rate, rot rate, respiratory quotient, ethanol content in pulp and pH value were measured. Meanwhile, the activities of some free radical scavenging and formation-related enzyme such as polyphenol oxidase (PPO), peroxidase (POD), catalase (CAT) and lipoxygenase (LOX) were analyzed. The results indicated that the pH value in pulp and fruit rot rate were significantly decreased, fruit firmness was well maintained, the storage period was effectively extended to 50 days, POD activity was increased and the LOX activity was decreased after the high CO<sub>2</sub> shock treatments for 48 h and 96 h. The results indicated that the treatments slowed down the rate of metabolism and maintained the fruit quality of blueberry fruits. In contrast, 144 h high CO<sub>2</sub> shock treatment caused irreversible damage, resulting in anaerobic respiration, off-flavor and fruit rot. It is suggested that as a shock-impact method, high CO<sub>2</sub> shock treatment may be used before the storage of blueberry fruits to inhibit the physiological metabolism and maintain the fruits quality.

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