High pressure CO_2 treatment alleviates lignification and browning of fresh-cut water-bamboo shoots (*Zizania latifolia*)

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Abstract

The study evaluated the effect of high pressure CO_2 (HPCD) treatment on the texture and color of fresh-cut water-bamboo shoots (WBS) during storage. In addition, the mechanism of HPCD treatment to maintain the quality of fresh-cut WBS was also investigated. The results exhibited that HPCD at 3 and 5 MPa could suppress the lignification-related and browning-related enzyme activities and delay the decline rate of phenolic content. PAL, CAD, POD, and PPO activities of 3 MPa HPCD-treated samples were 44 %, 31 %, 29 %, and 10 % lower than that of control ones at 10 d, respectively. Furthermore, low-field nuclear magnetic resonance results showed that HPCD treatment at 3 MPa could maintain the water content, which only decreased 7 % at the end of the storage, thereby retaining the original texture of WBS. The potential mechanism is that HPCD could alleviate lignification and browning of WBS by suppressing enzyme activities and retaining the moisture in samples. Hence, HPCD at appropriate pressure has a great potential to maintain the quality of fresh-cut fruit and vegetables during storage.