

Title Physiology and anatomy of longkong fruit abscission
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Abstract

Fruit abscission is an important problem in Longkong after harvest. There are 2 abscission sites; one between the peduncle and the calyx (SZ1), the other between the calyx and the fruit (SZ2). The fruit abscission in response to ethylene occurs only at SZ1. (To understand longkong's abscission process, studies on the sites anatomy, breaking strength, and activities of polygalacturonase and cellulase were conducted). The SEM study showed that when fruit were pulled off the peduncle before fumigated with ethylene, all cells in the SZ1 ruptured. After 1 µl/L ethylene treatment for 12 h cells separation occurred instead. As for SZ2, before ethylene exposure both cell rupture and cell separation was equally found. After ethylene treatment cells separation increased but cell rupture was still observed. Breaking strength of the SZ1 was 30.7 N after harvest. After ethylene exposure breaking strength was reduced by more than half with 1-MCP treatment the breaking strength remained the same as in the beginning. Breaking strength of the SZ2 was about 6 times lower than the SZ1 at harvest. When fumigated with ethylene breaking strength decreased by the same proportion as in SZ1, whereas 1-MCP treatment breaking strength was higher than the control, but lower than that at the beginning. *Polygalacturonase* activity in SZ1 was lower than that in SZ2. Ethylene exposure increased the activity of the enzyme, while 1-MCP treatment blocks the change in enzyme activity. *Cellulase* activity in SZ1 was also lower than in SZ2. The change in its activity after ethylene or 1-MCP treatment was not as apparent as *polygalacturonase*. The result suggests that polygalacturonase is probably the key enzyme responsible for fruit abscission.