

Abstract

We investigated chilling injury symptom (pericarp hardening) of reddish brown and reddish purple mangosteen fruits stored at 6°C (87.0% RH) and 12°C (83.5%RH) for 15 days. Fruits stored at 6°C had greater firmness than those stored at 12°C and reddish purple fruits had greater pericarp hardening than reddish brown fruits. Fruits stored at 6°C for 9 days and transferred to room temperature (29.5°C, 74.0%RH) for 3 days showed more prominent symptom of pericarp hardening. When pericarp hardening occurred, pericarp firmness and lignin content increased whilst total phenolics decreased. Reddish purple fruits were held in 0.25% O₂ during storage at 6°C did not reduce the pericarp hardening and showed no significant difference in firmness, lignin and total phenolics level when compared with normal air condition. Fruits still increased in firmness and lignin content, while total phenolics decreased under low O₂. Enzymes in the lignin biosynthetic pathway namely phenylalanine ammonialyase (PAL), cinnamyl alcohol dehydrogenase (CAD) and peroxidase (POD) were also determined. PAL and POD activities in fruit pericarp stored at VC increased when the storage time advanced. Upon transfer to room temperature, both PAL and POD activities were higher than that stored at 6°C and declined at the end of storage. CAD activity in pericarp hardening decreased slightly during low temperature storage. The key enzyme(s) of lignification in pericarp hardening of mangosteen fruit during and after low temperature storage are probably PAL and POD