Abstract

The majority of litchi fruit produced in South Africa is treated postharvest with sulphur. However, 97% of exported fruit are sold to the European Union, which has deemed sulphur to be unacceptable. Alternative forms of fruit quality maintenance are thus necessary. The primary cause of fruit postharvest browning is believed to be desiccation and oxidation of phenolics by polyphenol-oxidase (PPO). Previous work using PVC bag packaging has, however, resulted in enhanced postharvest fungal decay, due to excessive condensation. In this study fruit was placed in punnets lined with absorbent paper to prevent excessive free water and packaged in sealed polypropylene bags, with specific anti-mist and gas exchange properties. Static and hydrocooling methods were tested and for postharvest decay control, several antifungal compounds were applied. Fruits were stored at 1°C and 5.5°C for 40 days, with evaluations at 10 day intervals. The packaging method significantly reduced fruit water loss, enhancing retention of fruit colour for up to 40 days. PPO activity was higher in the rind of fruit that had turned brown and lower in fruit with good colour retention. Fruit stored at 5.5°C showed a statistically superior colour than those at 1°C and remained good for up to 40 days of storage. This higher storage temperature resulted better colour retention but greater incidence of disease. Application of the correct combination of anti fungal compounds resulted in reduced disease incidence and good fruit appearance. These postharvest treatments, packaging that will in future enable retention of both internal and external fruit qualities and thus allow for export.