

Title Role of hydroxyl radical in modification of cell wall polysaccharides and aril breakdown during senescence of harvested longan fruit

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Abstract

The effects of reactive oxygen species (ROS), especially hydroxylradical ($\cdot\text{OH}$), on cellular wall disassembly *in vitro* and *in vivo*, and aril breakdown in longanfruit, were investigated. $\cdot\text{OH}$ caused the disassembly of cellwall material (CWM) *in vitro*, demonstrated by the increases of total sugars and uronic acid released, and the downshift in molecular mass of CDTA soluble pectin (CSP) and Na_2CO_3 soluble pectin ($\text{CO}_3\text{-SP}$). In addition, $\cdot\text{OH}$ resulted in decreased $\text{CO}_3\text{-SP}$ content and increased CSP content in CWM suspension, suggesting the conversion of $\text{CO}_3\text{-SP}$ to CSP. Application of exogenous $\cdot\text{OH}$ accelerated arilbreakdown in longanfruit while the process was delayed by l-cysteine·HCl, a ROS scavenger. Furthermore, lower CWM content and decreased molecular mass of pectins were observed in $\cdot\text{OH}$ -treated fruit. These results indicated that $\cdot\text{OH}$ contributed to the degradation of cell wall polysaccharides, resulting in aril breakdown in longanfruit.