

Abstract:

Activities of pyruvate decarboxylase (PDC) and alcohol dehydrogenase (ADH) in 'd'Anjou' pears (*Pyrus communis*, L.) during air storage and different controlled atmosphere (CA) storages at -1°C were investigated. Activities of PDC and ADH in air-stored fruit were around $0.35 \text{ mmole}\cdot\text{g}^{-1}\cdot\text{min}^{-1}$ and $0.28 \text{ }\mu\text{mole}\cdot\text{g}^{-1}\cdot\text{min}^{-1}$ respectively during 150 days of storage in air at -1°C . Fruit stored in 0.5% and 1.0% O_2 increased PDC activities up to $1.2 \text{ }\mu\text{mole}\cdot\text{g}^{-1}\cdot\text{min}^{-1}$ without changing ADH activity after 3 months of storage. Skin black speck (SBS) and pithy brown core (PBC) disorders of 'd'Anjou' fruit stored in 0.5% and 1.0% O_2 did not develop until 4 months of storage. Fruit stored in 1.5% and 2.0% O_2 maintained similar activities of PDC and ADH as those stored in air and suffered minimal incidences of SBS and PBC disorders regardless of storage length. The results suggested that PDC activities in 'd'Anjou' pears were induced by low oxygen ($<1.0\%$) prior to the development of SBS and PBC disorders. PDC activities, therefore, could be used as a biochemical marker for forecasting SBS and PBC disorders for 'd'Anjou' pears stored in the stressful CA conditions.