

Title Modelling respiration of packaged fresh-cut 'Rocha' pear as affected by oxygen concentration and temperature

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Abstract

Respiration rates were measured in fresh-cut 'Rocha' pear (*Pyrus communis* L.) stored at four temperatures (0, 5, 10 and 15 °C) and with oxygen partial pressures ranging from 0 to 18 kPa. Respiratory quotient and ethanol production were used to determine the fermentation threshold. The oxygen concentration effect on the respiration rate was accurately described using Michaelis–Menten kinetics, without non-competitive inhibition by CO₂, and the effect of temperature on the respiration rate was well modelled by exponential functions. The oxygen level at which respiration was half its maximum (apparent K_{m,O_2}) was similar to or only slightly greater than the fermentation threshold. The narrow range of oxygen between K_{m,O_2} and the fermentation threshold, suggests that modified atmosphere packaging technology has a limited applicability toward extension of the shelf-life of fresh-cut 'Rocha' pear.