Title Efforts to model microstructure and firmness of 'Rocha' pear, following storage under controlled atmosphere

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Abstract

In order to assess the influence of storage, under various controlled atmospheres, on the microstructure and firmness of 'Rocha' pear, fruits were stored for 4 months at 2°C, under 2 kPa O_2 + 5 kPa CO_2, 2 kPa O_2 + 0.5 kPa CO_2 and 2 kPa O_2 – using air as control. The microstructure of the product was evaluated via scanning electron microscopy: quantitative image analysis was possible via analysis by a trained panel. After storage, a selected microstructure parameter – i.e. degree of cellular disruption, as well as sensory and instrumental measures of firmness were monitored by 1, 6 and 8 d of exposure to air, at room temperature. The degree of cellular disruption increased, and sensory and instrumental measures of firmness decreased over time. Pears stored under 2 kPa O_2 + 0.5 kPa CO_2 were firmer – in both sensory and instrumental points of view, than under the other storage conditions tested, and exhibited a lesser degree of cellular disruption (that was essentially similar to that of the control). The dependence of instrumental firmness on time at room temperature was well described by an exponential decay model, the constant of which was influenced by the storage conditions. Sensory and microstructure parameters were modelled according to a Michaelis-Menten type equation.