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Physiological and Technological Aspects of Gaseous and Thermal-Treatments of Fresh Fruit & Vegetables



BOOK OF ABSTRACTS

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PHYSICO-CHEMICAL AND BIOCHEMICAL PARAMETERS TO HIGHLIGHT QUALITY CHANGES OF 'ROCHA' PEAR DURING CA STORAGE

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The commercial storage of pears in atmospheres low in O₂ and high in CO₂ concentrations has had a great implement in the past 15 years. One of the problems that may arise during long term storage of pears is the loss of their ripening capacity. The fruit may become yellow but remains hard.

The objective of this work was to evaluate the effects of CA storage on skin colour, flesh firmness, titrable acidity, scald and brownheart incidence of 'Rocha' pear in relation to long term storage under NA. The peroxidase activity was also evaluated in order to help understand quality changes at a biochemical level. Together with polyphenoloxidase, POD may contribute to enzymatic browning. Also, this enzyme may have a role in the disorder of texture-related attributes of pears.

Four different CA compositions were tested (levels of O₂: 2 and 4%; levels of CO₂: 0.5 and 1.5%). The fruits stored under NA conditions lost their capacity of ripening earlier than samples from CA, based on observations of flesh firmness, scald and brownheart incidence and flavour. Controlled atmosphere with higher O₂ levels did not reduce the scald either and the skin colour of the samples was more yellow than with other CA treatments.

There was a decrease of POD activity during storage, for all atmosphere compositions. After 6 days of exposure to room temperature, POD activity of CA-stored fruits was lower than NA-stored fruits after 6 months of storage, indicating an effective control of this enzyme by the CA conditions used. The atmospheres with 1.5% CO₂ had tendency to present lower activity during a nine-day period of exposure to room temperature.

Considering that the brownheart was not severe, 2%O₂ plus 1.5%CO₂ seemed to be the CA composition most adequate to keep the ripening capacity and the overall quality of the fruits.