

**Title** Minimally processed potatoes  
Part 2. Effects of high oxygen partial pressures in combination with ascorbic and citric acid on loss of some quality traits

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### **Abstract**

Sliced potatoes were stored in flexible packaging under different oxygen partial pressures (10, 55 and 100 kPa) after dipping treatments with ascorbic and citric acid at different concentrations. The levels of oxygen, ascorbic and citric acid were modulated according to a Central Composite Design. The response surface methodology allowed an assessment of the effects of these variables and their interactions on the respiration rate in a closed system, on the carbon dioxide accumulation rate and the volatile metabolites production inside flexible pouches. The results showed that the respiration rate did not increase in direct linear proportion to the oxygen partial pressure and there was no significant difference in respiration between 55 and 100 kPa, even though the respiration rate was higher at these super-atmospheric oxygen levels than at 10 kPa. Citric acid did not affect the respiration significantly, while the respiration rate increased with the increase in ascorbic acid concentration. However, at the highest level of ascorbic acid tested (5%), the respiration rate decreased. During storage in a high barrier plastic pouch, a higher CO<sub>2</sub> accumulation rate was generally observed under 55 kPa than under 10 and 100 kPa. High oxygen partial pressures (55 and 100 kPa) did not stop the production of hexanal but they had an inhibitory effect on the anaerobic volatiles production.