

**Title** Quality changes of intact and sliced fennel stored under different atmospheres  
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#### **Abstract**

The effect of atmospheres of 5 kPa O<sub>2</sub> + 5 kPa CO<sub>2</sub>, 5 kPa O<sub>2</sub> + 15 kPa CO<sub>2</sub>, and 21 kPa O<sub>2</sub> + 0 kPa CO<sub>2</sub> (as a control) on the metabolic activity and quality of intact and sliced 'Orion' fennel was studied. Under these atmospheres, intact bulbs were stored for 28 days at 5 °C followed by 3 days at 15 °C and 60–70% RH in air while sliced fennel was stored under the same atmospheres for 14 days at 5 °C. In both intact bulbs and sliced fennel respiration rates, ethylene production, microbial counts (only for slices), colour, sugar and organic acid contents, and chemical and sensory attributes were evaluated. By using a controlled atmosphere (CA) with low O<sub>2</sub>, the respiration rates and ethylene production decreased by more than 50% compared to air. This reduction of the metabolic activity was more substantial for intact bulbs than sliced fennel. CA with 5 kPa O<sub>2</sub> delayed the quality loss of slices and fennel bulbs. After 3 weeks of storage, intact bulbs stored in 5 kPa O<sub>2</sub> + 15 kPa CO<sub>2</sub> suffered physiological damage developing as a brown spot. Using a CA of 5 kPa O<sub>2</sub> + 15 kPa CO<sub>2</sub> led to the best quality in sliced fennel. However, the recommended atmosphere for intact fennel was 5 kPa O<sub>2</sub> + 5 kPa CO<sub>2</sub>.