

**Title** Physicochemical changes of prickly pear cactus stems under passive and semi-active modified atmospheres packaging

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#### **Abstract**

The young, rapidly growing flattened stems or cladodes of the prickly pear cactus (*Opuntia* spp.), known in Spanish as “nopalitos”, are commonly consumed in Mexico as a vegetable. In our work we have assessed the effect of packaging nopalitos in passive and semi-active MAP with CO<sub>2</sub> initial partial pressures of 20, 40 or 80 kPa at 5°C. Passive MAP (where no CO<sub>2</sub> was added) had an atmosphere of up to 8.9 kPa O<sub>2</sub> and 7 kPa CO<sub>2</sub> after 35 days of storage. Semi-active atmospheres with initial CO<sub>2</sub> pressures of 40 or 80 kPa increased the losses in texture, weight, chlorophyll content, dietary fiber content and color. Passive MAP and semi-active MAP with 20 kPa CO<sub>2</sub> significantly decreased the losses in the above-mentioned parameters, and also decreased the microbial counts (total aerobic mesophiles (AeM), mold and yeasts), but slightly increased the total anaerobic mesophiles (AnM) counts. Therefore, fresh prickly pear cactus stems can be stored for up to 32 days in MAP with ≤ 20 kPa CO<sub>2</sub> without significant losses in quality nor any significant increase in microbial counts.