

Title Modified atmosphere packaging of nopal (prickly pear cactus stems, *Opuntia* spp.)
Author E.M. Yahia and J.C. Guevara-Arauza
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Abstract

Prickly pear cactus stems (nopal or nopalito) are widely consumed in Mexico for their nutritional and health benefits, and also exported to some other countries. The effect of passive or semi-active modified atmosphere packaging (MAP) on the physico-chemical and microbiological characteristics of nopalitos was determined during storage at 5°C and 85% RH for up to 35 days. In semi-active MAP we have injected elevated pressures of CO₂ (20, 40 or 80 kPa) in the packages immediately after sealing. Passive atmospheres (where no CO₂ was added) were created with respiration gases and film permeability. Semi-active MAP with initial pressures of 40 or 80 kPa CO₂ increased the losses in texture, weight, chlorophyll content, dietary fiber content and color. Passive MAP, which developed an atmosphere of up to 8.9 kPa O₂ and up to 7 kPa CO₂, and semi-active MAP with an initial 20 kPa CO₂ significantly decreased losses in all the quality parameters analyzed and in microbial population (total aerobic mesophiles, moulds and yeast counts), but slightly increased the total anaerobic mesophiles counts. The microorganisms identified were not pathogenic. Therefore, fresh prickly pear cactus stems can be stored for up to 32 days in MAP with CO₂ pressures ≤20 kPa without significant losses in quality, nor any significant increases in microbial population.