

Abstract:

Prickly pear cactus stems (nopal or nopalito) are consumed in Mexico for their nutritional and health benefits. The effect of passive or semi-active modified atmosphere packaging (MAP) on the physico-chemical and microbiological characteristics of prickly pear cactus stems was determined during storage at 5°C and 85% RH for up to 35 days. In semi-active MAP we have injected elevated concentrations of CO₂ (20, 40 or 80 kPa) to the packages immediately after sealing. Passive atmospheres (where no CO₂ was added) were created because of respiration gases and film permeability. Semi-active MAP with elevated initial concentrations 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 CO₂ concentration of 20 kPa significantly decreased losses in all the quality parameters analyzed and in microbial population, 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 concentration of ≤ 20 kPa without significant losses in quality, nor any significant increase in microbial population.