

### **Abstract**

The young, rapidly growing flattened stems or cladodes of the prickly pear cactus stems (*Opuntia* spp.), known in Mexico as “nopal or nopalito”, are commonly consumed in Mexico as a vegetable, and are shown to reduce blood glucose levels. Nopalitos are very perishable with a storage life of one day at room temperature and 6 days when packaged in polyethylene bags and stored at 5°C. In this work we have tested the effect of packaging nopalitos at 5°C in modified atmospheres (MA) for up to 30 days, where O<sub>2</sub> pressure was decreased to up to 8.6 kPa and CO<sub>2</sub> pressure was increased to up to 6.9 kPa. MA packaging (MAP) significantly increased the storage life and decreased quality deterioration. MAP significantly decreased losses in texture, weight, chlorophyll content, crude fiber content and colour. MAP also decreased chlorophyllase activity, and caused the least increase in yeast and moulds, and total aerobic mesophiles counts, but slightly increased the total anaerobic mesophiles counts. In another set of experiments we have compared the effects of passive and semi-active MAP on the postharvest life and quality of the cladodes at 5°C. Semi-active MAP included elevated CO<sub>2</sub> pressures (20, 40, and 80 kPa) which was applied in the packages immediately after sealing. 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>. Atmospheres with initial pressures of 40 and 80 kPa CO<sub>2</sub> 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, mold and yeasts), but slightly increased the total anaerobic mesophiles counts. The microorganisms identified were *Pseudomonas*, *Leuconostoc*, *Micrococcus*, *Bacillus*, *Ruminococcus*, *Absidia*, *Cladosporium*, *Penicillium* and *Pichia*.