

Title Preliminary study on edible film with a natural plant extract to improve quality of fresh fruits for supply chains

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Citation ISHS Acta Horticulturae 712: 617-622. 2006

Keywords *Ugni molinae* Turcz; antioxidant capacity; edible coating; film permeability; *Prunus armeniaca* var. Patterson; fruit quality

Abstract

There is no report in Chile about quality in the supplier chains of fruits and vegetables often are visible deterioration in the retail market. This study pretends to enhance their quality, with rather simple techniques, like edible coatings/films acting as bioactive packaging, with extract of the native plant murta (*Ugni molinae* Turcz), ecotype Soloyo Chico (SC) of Pumalal, near Temuco, Chile. The leaves water extract, rich in polyphenols (HPLC-MS chromatogram shows that SC has more myricetin than another ecotype), was evaluated for antioxidant activity by measuring their ability to scavenge DPPH radicals and the protective action toward linoleic acid peroxidation in micelles of sodium dodecyl sulfate, and presents a significantly better antioxidant capacity than the other ecotype tested. The edible coatings were prepared of carboxymethylcellulose with glycerol and sunflower oil as plasticizers (CMC), and water (CMC-H₂O) or extract (CMC-SC), spreading 20 ml of film forming solutions on a 18 x 9 cm area, dried at 25°C, films were peeled off (0.016-0.046 mm thickness), water vapor permeability measured with cup-method, gas permeability (O₂ and CO₂) measured by isostatic-method/gas-chromatography. Comparing with the CMC-H₂O, films with CMC-SC acts as barrier to O₂ but not to H₂O and CO₂, modifying significantly (p<0.05) the permeability of the film. Treatments on apricots (*Prunus armeniaca* var. Patterson): fruits were coated with either CMC-SC or CMC-H₂O, dried at 25°C and Control-fruits, without any treatment, were stored at 0°C, 95%RH. After 14 days, a better weight retention and color (measured with a tristimulus colorimeter) as lightness (L*), Chroma and Hue, although not significant, was observed with CMC-SC compared to CMC-H₂O, being both CMC treatments significantly better (p<0.05) than the Control fruits, showing that these edible films can improve shelf-life of horticultural products, which could be applied in the supply chains.