

Posidonia Oceanica And Green Tea Extract As Active Agents For Shelf Life Extension Of Fresh Cut Peach

ESTENSIONE DELLA SHELF LIFE DI PESCHE DI IV GAMMA MEDIANTE L'USO DI ESTRATTO DI POSIDONIA OCEANICA E TÈ VERDE

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Nowadays the reduction of food waste and the availability of food all over the world areas are priority keys for society. In this context, the shelf life extension of fresh products in a sustainable way may represent one of the main goals. The aim of the present research work was to extend the shelf life of fresh cut peach slices by using extracts of *Posidonia oceanica* (POS) and green tea (GT), and compared to the control. Total polyphenols content was assessed by Folin-Ciocalteu method and the antioxidant capacity by DPPH (2,2-Diphenyl-1-Picrylhydrazyl) assay. Antimicrobial activity of the two extracts was initially carried out *in vitro* by determining the Minimal Inhibitory Concentration (MIC) against *Escherichia coli*, *Listeria innocua*, *Pseudomonas putida*, *Staphylococcus aureus*, *Saccharomyces cerevisiae*, *Aspergillus niger* and *Penicillium chrysogenum*. The two extracts *in vivo* on peach slices by dipping were applied (only water for the control), then, slices were placed into low-density polyethylene (LDPE) bag and stored at $3 \pm 1^\circ\text{C}$ for up to 7 days. Microbiological analyses, color (L^*, a^*, b^*), total soluble solid (TSS) and titratable acidity (TA) on peach slices were carried out every 3 days.

POS showed the highest polyphenols content (615 ± 45 mg Gallic Acid Equivalent/g – mg GAE/g) while GT 526 ± 28 mg GAE/g. The values of EC_{50} , for POS, was 72.42 ± 22.90 mg/L, while for GT 3.80 ± 0.11 mg/L. Trials *in vitro* showed MIC values of above 2 g/L for POS and above 1 g/L in GT mainly against Gram positive bacteria. POS was also found to lead a growth delay in the case of fungi, approximately 60 h compared to the control.

Results related to the Total Aerobic (TAC) and yeasts and moulds (Y&M) counts highlighted that peach slices dipped with POS maintained in the first 5 days of storage the microbiota at lower or analogous levels than those found at t_0 (1.80 ± 0.09 log cfu/g respect 2.30 ± 0.11 log cfu/g and 1.80 ± 0.05 log cfu/g respect 1.70 ± 0.03 log cfu/g of the control, respectively for TAC and Y&M).

Regarding pomological analysis, after seven days, lightness of the peach slices decreased 28% in POS, 24% in GT and 35% in control. During shelf life TSS increased 8% in the control, 2% in POS and remained unchanged in GT, after seven days. At the same time, TA decreased 30% in POS, 20% in GT treatment and 63% in the control. During the experiment TSS increased in all treatments, more rapidly in the control; meanwhile the TA decreased slowly in treated samples compared to the control. Concluding, *Posidonia oceanica* and green tea extracts were found able to delay the colour and pomological parameters decay, maintaining a good fruit quality during shelf life. Data already showed evidence a better performance of the *Posidonia* extract, limiting the growth of microorganisms responsible for fresh fruit deterioration.

Keywords: postharvest, fruit, antioxidant, microbiology