

Suwalee Fongin 2011: Effects of Modified Atmosphere Packaging on Aroma Compounds, Phenolic Compounds, Vitamin C Contents and Antioxidant Capacity of Fresh-cut Pomelo. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Assistant Professor Wannee Jirapakkul, Ph.D. 162 pages.

Effects of modified atmosphere packaging on aroma compounds, phenolic compounds, vitamin C contents and antioxidant capacity of fresh-cut pomelo were investigated. Fresh-cut pomelo were packed into polypropylene (PP) tray sealed with one of these three plastic film i.e. polyethylene (PE), polyvinylchloride (PVC) or low density polyethylene (LDPE). They were stored at 5 °C. Aroma compounds were analyzed by Gas Chromatography-Mass Spectrometry (GC-MS). Total phenolic contents were tested by Total phenols assay using Folin-Ciocalteu reagent. Naringin and vitamin C contents were examined using high performance liquid chromatography (HPLC). The antioxidant capacity was measured by 2,2-diphenyl-1-picrylhydrazyl radical (DPPH) method. Sensory evaluation of flavor quality was evaluated by Quantitative Descriptive Analysis (QDA). The concentrations of O₂ and CO₂ in packages sealing with PE, PVC and LDPE film at equilibrium were 11%O₂ + 2%CO₂, 9%O₂ + 3%CO₂ and 7%O₂ + 6%CO₂, respectively. The major aroma compounds which related to odor description of citrus fruits and pomelo aroma were *l*-limonene, nonanal, decanal, α -terpinolene, δ -elemene, (*E*)- β -caryophyllene, α -terpipene, α -humulene, germacrene D, valencene, δ -cadinene and nootkatone. The results suggested that fresh-cut pomelo with PE film packed could preserve aroma compounds better than those of PVC and LDPE film packed during storage for 6 weeks. Sensory evaluation of fresh-cut pomelo packed with LDPE film had lower pomelo flavor intensity than those of other film types. At the end of storage, fresh-cut pomelo with LDPE film packed had the highest fermented flavor intensity. Moreover, haze was formed on LDPE film surface. However, phenolic compounds, vitamin C contents as well as antioxidant capacity of pomelo packed with 3 types of film during the storage were not significantly different.

Student's signature

Thesis Advisor's signature