

## Abstract

'Superior seedless' table grapes were stored for 7 days at 0 °C followed by 4 days at 8 °C + 2 days at 20 °C under modified atmosphere packaging (MAP). Two polypropylene films (PP) were used to generate the MAP, the micro-perforated PP-30 and an oriented PP (OPP). The OPP film was applied with and without fungicide (10 µL of *trans*-2-hexenal or 0.4 g Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> kg<sup>-1</sup>). As control a macro-perforated PP was used. PP-30 packages reached the lowest O<sub>2</sub> and the highest CO<sub>2</sub> levels. Control clusters showed the highest weight losses and decay while almost no losses occurred under MAP treatments. No changes in softness, skin and/or pulp browning, or cluster shatter were found. After shelf life MAP-treated clusters showed slight to moderate stem browning, except under SO<sub>2</sub> where practically no browning occurred while control clusters showed an extreme stem browning. After shelf life, MAP treatments showed good visual appearance and crunchiness, while control fruits were unmarketable. No off-flavors were detected for MAP treatments except for hexenal-treated berries. No remarkable changes for color, firmness, soluble solids content, pH, titratable acidity and maturity index were detected. Total sugars content at harvest was 200 g L<sup>-1</sup> and only slight decreases were found after shelf life for most treatments. Total organic acids content at harvest was 15.4 mg 100 mL<sup>-1</sup>, which remained quite constant after cold storage and shelf life. The main phenolic compounds were flavan-3-ols (over 85% from the total content), hydroxycinnamic acid derivatives and flavonols, whose total amount at harvest was 140 mg kg<sup>-1</sup> in a fresh weight basis. After shelf life only slight decreases in total phenolics occurred in all treatments. As a main conclusion, SO<sub>2</sub>-free MAP kept the overall quality of clusters close to that at harvest, with few differences when SO<sub>2</sub> was added.