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Effects of modified atmosphere packing and chitosan treatment on quality of minimally processed table grapes during cold storage

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This study aims to investigate the effect of modified atmosphere packaging (MAP) and chitosan treatments on quality attributes of berries 'Thompson Seedless'. A 200 g of berries per each replicate were stored in polypropylene containers at 0.5o C for 45 days (6 replicates per each treatment). Treatments were as follows: 1. Control: Polypropylene containers sealed hermitically with a film (35.4 pmol/s/m²/Pa oxygen transmission rates), 2. Modified atmosphere packaging (MAP), 3. Berries immersed in 0.5% chitosan and 4. Coated berries subjected to MAP. Samples to assess the quality were taken on a weekly basis. No differences were observed in pH, titrate able acidity, sugar content, firmness, color, after the first 7 days. Significance differences ($p < 0.03$) were observed after 3 weeks. MAP with chitosan-coated berries exhibited the highest quality (color, firmness, sugar content, titrate able acidity) as compared to other treatments with control recorded the lowest values among all treatments. Berries from control treatment showed a significant increase in soluble sugar content as compared to other treatments. Titratable acidity decreased in all treatments by the last week. The MAP-chitosan treatment exhibited no decay, no change in color or in firmness as compared to MAP and control treatments at 45 days. We concluded that the MAP-chitosan treatment is a promising treatment to reduce decay, extend shelf life while maintaining optimum quality of minimally processed grapes in cold storage.

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