

Title Influence of surface treatments and storage temperature on shelf-life and quality of rabbiteye blueberries

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### Abstract

Fresh blueberries and those for the frozen market tend to contain a high microbial load, including yeasts and molds. Temperature abuse and time may influence the amount and activity of the native antioxidant compounds. This makes them very perishable and susceptible to rapid spoilage. The objective of this study was to evaluate different treatments and storage temperatures (refrigerated and abuse-room temperature) on microbial load and quality of rabbiteye (*Vaccinium ashei*) blueberries. Fresh picked blueberries were packed untreated (control) or treated with 100 ppm chlorine (CaHOCl) solution or Tsunami<sup>®</sup> (40 ppm peroxyacetic acid) for 30 s, air dried and placed in plastic clamshells. Samples were stored at 2-3 °C (RF) or at 21 °C (RT), and evaluated every five days for up to 30 d. Samples were analyzed for texture, weight loss, color, total anthocyanins, total phenolics, yeast and molds, aerobic plate and psychotropic plate counts. Anthocyanins and phenolics were extracted using methanol with 4% acetic acid. Anthocyanins were determined using pH differential method and phenolics using Folin-Ciocalteu reagent. Color, texture and firmness changes were more prominent on RT berries. Different treatments did not influence texture of the RF berries. After 25 d, RT berries lost 24-36% of their total weight, while RF berries lost 10-15% of their weight after day 30. Total phenolics significantly increased from 472 to 629 mg/100 g during 30 d in RF berries, while there were no changes in anthocyanins over time or by storage temperature. A 2-log increase in microbial counts was recorded for RT berries regardless of treatment after 5 d (end of acceptable quality). Chlorine solution was most efficient in reducing microbial counts on berries. Pretreatment will not aid in delaying spoilage of berries by temperature abuse. Refrigeration of blueberries seems to be more important than pretreatment in extending shelf-life and maintaining quality of blueberries.