

Title Improving cranberry shelf-life using high voltage electric field treatment
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Abstract

Cranberries (*Vaccinium macrocarpon* Aiton) were treated with high voltage electric fields (HVEF) of 2, 5 or 8 kV cm⁻¹ in strength for 30, 60 or 120 min in a parallel plate electrode system. The treated berries were stored at ambient conditions (23 °C and 65% RH) for three weeks to study the effect of treatments on their respiration rate, physiological loss of mass (PLM), colour, total soluble solids (TSS) and skin puncture strength. Resulting respiration rates were in the range of 11.69–14.56 mL CO₂ kg⁻¹ h⁻¹ after the first week of storage, and increased to 13.95 and 21.33 mL CO₂ kg⁻¹ h⁻¹ by the end of third week. For both two and three weeks of storage, HVEF-treated cranberries showed significantly lower respiration rates than the control. This particular attribute indicates the potential of HVEF for improving shelf-life. The PLM of HVEF-treated cranberries were in the range of 23.2–30.4% after three weeks of storage. There was no significant difference between treated and untreated berries in terms of absolute L^* , a^* and b^* colour values; however, the colour difference value ΔE^* ab of treated berries was somewhat greater. The TSS content of various HVEF-treated cranberries was in the range of 7.27–7.69 °B, similar to the TSS content of untreated berries (7.4 °B) before storage. The skin puncture strength of different HVEF-treated cranberries was in the range of 11.7–14.3 N; while the untreated berries (11.2 N) showed lower values prior to storage.