

Title Effects of sanitation, freezing and frozen storage on enteric viruses in berries and herbs
Author S. Butot, T. Putallaz and G. Sánchez
Citation International Journal of Food Microbiology, Volume 126, Issues 1-2, 15 August 2008, Pages 30-35
Keywords Enteric viruses; Berries; Vegetables; Survival; Sanitation

Abstract

Norovirus (NV) and hepatitis A virus (HAV) are foodborne enteric viruses associated with outbreaks of disease following consumption of fresh or frozen produce. Model experiments were performed to determine the effectiveness of certain commercial processes for the removal of enteric viruses that might be present in berries and herbs. The survival and persistence of HAV, NV, rotavirus (RV) and feline calicivirus (FCV), a surrogate for NV, in frozen produce over time were determined. Survival and inactivation of HAV, RV and FCV were assessed by viral culture and quantitative reverse transcription-PCR (RT-PCR), whereas NV persistence was determined by quantitative RT-PCR only. Freezing did not significantly reduce the viability of any of the viruses except the infectivity of FCV in strawberries. Frozen storage for 3 months had limited effects on HAV and RV survival in all tested food products, whereas in frozen raspberries and strawberries FCV infectivity showed the highest decay rate due to acid pH. To simulate postharvesting conditions, fresh berries and herbs were rinsed with tap, warm or chlorinated water or with a chlorine dioxide (ClO₂) solution. Available chlorine at a concentration of 200 ppm and ClO₂ at 10 ppm reduced measurable enteric viruses in raspberry and parsley samples by less than 2 log₁₀ units.