

Title Survival of *Salmonella* on Wounded Orange Surfaces
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Citation Program and Abstract Book, IAFP 2005 (International Association for Food Protection) - 92nd Annual Meeting, 14-17 August 2005, Baltimore, Maryland, USA. 256 pages.
Keyword orange; *Salmonella*

Abstract

Oranges with minor surface wounds may go undetected at the packing house. The objective of this study was to determine the impact of puncture wounds on survival of *Salmonella* on orange surfaces. Oranges were wounded by puncturing the peel (2 mm diameter x 3 mm deep). After wounding, oranges were held at 24°C for 0 or 24 before inoculating the wound or intact control site with 10 µl of a five-strain cocktail of *Salmonella* spp. suspended in 3% sodium bicarbonate (SB) or 5% horse serum. Oranges were incubated at 24°C for 1 h (to dry inoculum) or for 24h before analysis. *Salmonella* were recovered by rubbing the whole orange for 60 sec in 10 ml of DE broth and/or by excising a 1-cm² area around the inoculation site and albedo below the wound. The excised peel was stomached for 1 min in 10 ml of DE broth. Samples were plated onto tryptic soy and bismuth sulfite agars and incubated at 37°C for 24 or 48 h, respectively. Reductions of 1 log (1 h) and 2 log (24 h) were observed on both wounded and unwounded sites regardless of inoculum carrier. However, 1-log greater reduction were observed after 24 h on intact site when SB was used. Survival was similar o intact surfaces and 24-h old wounds. When *Salmonella* was recovered by rubbing, similar levels were recovered from intact and wounded sites. When inoculation site were subsequently excised and stomached 3-log greater recovery of *Salmonella* was observed at the wound sites. *Salmonella* in liquid suspension can enter and survive in minor orange peel wounds emphasizing the need for postharvest systems that minimize fruit damage and maintain water sanitation.