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The efficacy of chemical sanitizers on the reduction of *Salmonella* Typhimurium and *Escherichia coli* affected by bacterial cell history and water quality

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1 **The efficacy of chemical sanitizers on the reduction of *Salmonella* Typhimurium and**
2 ***Escherichia coli* affected by bacterial cell history and water quality**

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11 **Highlights**

- 12 • Chlorine dioxide has similar effects as sodium hypochlorite during produce washing.
- 13 • Silver-copper has longer microbial inactivation kinetics than ClO₂ and NaClO.
- 14 • Bacterial cell history did not affect the efficacy of studied sanitizers.
- 15 • Organic load, water temperature, and pathogen attachment/release affect sanitizers.
- 16 • Minimum effective sanitizer concentrations are low but help control water quality.

17 **Abstract**

18 Washing fresh produce with potable water helps to remove microorganisms, providing about
19 a 1- to 2-log reduction, but this process can also pose an opportunity for cross-contamination
20 of bacteria in the washing tank. The objective of this study was to evaluate the efficacy of
21 three chemical sanitizers, sodium hypochlorite, chlorine dioxide, and a silver-copper solution
22 on the reduction of *S. Typhimurium* and extended-spectrum beta-lactamase (ESBL) *E. coli* as

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