

Effects of Common Household Chemicals on Microbial Populations on Lettuce Leaves and Antibiotic degradation and residue removal

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Introduction: Fruits and vegetable consumption is increasing with the shift to healthier diets. Concomitantly, there is also an increase in reported foodborne illnesses and outbreaks involving fresh produce. In developing countries, consumers use household chemical products such as Clorox, baking soda, organic acids, and salts for washing fresh produce in the home, primarily for removal of debris and pesticide residues. However, studies on microbial reduction and antibiotic residue removal by household chemicals remain limited.

Purpose: The goal of the research is to investigate the microbial reduction on Romaine lettuce leaves and a change in antibiotic efficacy associated with exposure to household chemicals including bleach, baking soda, and salt

Methods: The antimicrobial efficacy of bleach, baking soda, and table salt on *Listeria monocytogenes* (2 isolates) and *Salmonella* (2 isolates) associated with romaine lettuce leaves was evaluated. The shift in antibiotic activity following exposure to household chemicals was determined using Minimum Inhibitory Concentration Testing assay on *Listeria Monocytogenes* and *Salmonella*. The antibiotics used included gentamicin, streptomycin, tetracycline, and oxytetracycline.

Expected Results: The household chemicals may achieve a 1 to 3 Log CFU reduction/50cm² of bacteria on lettuce leaves. The MIC values of some of the antibiotic will likely be altered.

Significance: The research will aid in determining whether common household chemicals can remove antibiotic residues from fresh vegetables and fruits while decreasing the microbial load on those commodities.