Comparative Evaluation of the Efficacy of Organic Sanitizers Against *Listeria monocytogenes*, *Salmonella enterica*, *Escherichia coli* O157:H7 and Native Leafy Green Microbiota on Different Food Contact Surfaces

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The effectiveness of sanitizers in the food industry is influenced by several factors, including the surface of application. Overuse of chlorine-based chemical sanitizers can result in the development of resistance among the microbes. These chemical sanitizers can have adverse effects on human health, while also being corrosive to equipment and other surfaces. In this study, the efficacy of organic and plant-based sanitizers on food contact surfaces against foodborne pathogens and native leafy green microbiota was investigated. Coupons of stainless steel 304, high density polyethylene (HDPE), polyvinyl chloride (PVC) and polycarbonate (PC) were inoculated with pathogens (*Salmonella enterica*, *Listeria monocytogenes* and *Escherichia coli* O157:H7) and native leafy green microbiota (from spinach, cut romaine and arugula). The inoculated coupons were dried for 30 minutes and then treated for two minutes with test sanitizers including a 0.5% essential oil microemulsion, 5% plant extract solution and 20% commercial organic sanitizer. Coupons were dipped in neutralizing broth, vortexed and aliquots were plated on tryptic soy agar for enumeration. The essential oil microemulsion and commercial organic sanitizer were very effective in reducing microbial populations below the detection limit (<1 log CFU/coupon). Plant extract showed variable efficacy based on the microbe and type of coupon. For *L. monocytogenes*, the plant extract resulted in reduction below detection limits and for *Salmonella*, reductions ranging from 1.3 to 2.5 log CFU/coupon were observed. For *E. coli* O157:H7, reductions were below detection limits for Stainless Steel 304 and PC, and 3.5 and 4.1 log CFU/coupon for HDPE and PVC, respectively. For all native leafy green microbiota, reductions ranged from 3.6 to 5.1 log CFU/coupon for different food contact surfaces, while spinach microbiota were below detection levels on PVC and PC. Results indicate that organic sanitizers can potentially be used to sanitize food contact surfaces to reduce cross-contamination in food processing plants.