



Cross-contamination in food-contacting surfaces: novel approaches to control food-borne pathogens

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Food-contacting surfaces can be easily contaminated with pathogenic bacteria during food processing being a source of contamination. This phenomenon, known as cross-contamination, is a common factor responsible for many foodborne outbreaks that leads to wide economic loss and has a strong impact on public health worldwide. Several approaches have been used in order to minimize this problem, being the modification of food-contacting surfaces (incorporation of antimicrobial compounds) and chemical disinfection (development of effective sanitizers) the most common.

Accordingly, the ability of adhesion and biofilm formation by *Salmonella* Enteritidis on kitchen bench stones and on stones with Microban® incorporated was assessed. The results revealed that all stones tested are prone to bacterial adhesion and no considerable effect of triclosan was observed in both silestones. These results points to the need of using sanitizers. In this context, the susceptibility of *L. monocytogenes* and *S. enterica* biofilms to four disinfectants – sodium hypochlorite, benzalkonium chloride, hydrogen peroxide and triclosan was studied. It was observed that biofilms from both bacterial species were more susceptible to sodium hypochlorite than to any other disinfectant. However, chemical disinfection can lead to the acquisition of bacterial resistance since it was observed that disinfection survival cells seem to develop a stress response and/or become more virulent, which may compromise food safety and represents a potentially increased risk for public health. In order to overcome these disadvantageous, the potential of photocatalytic disinfection (TiO₂-coated surfaces) was also assessed. Although it has been revealing as a promising alternative, some improvements have yet to be made.