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ADHESION AND BIOFILM FORMATION BY A *SALMONELLA ENTERICA* ENTERITIDIS ISOLATE ON KITCHEN BENCH STONES – EVALUATION OF THE ANTIBACTERIAL EFFECT OF MICROBAN®

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Contamination of food processing materials by microorganisms is the basis of the cross-contamination phenomenon and, therefore, is directly associated with the occurrence of severe foodborne diseases. Some approaches have already been made in order to control microbes' attachment and development on food-contact surfaces, being the incorporation of antimicrobial compounds one of the most promising. In this context, the aim of this work was to assess bacterial adhesion and biofilm formation by *Salmonella* Enteritidis on kitchen bench stones (materials yet poorly studied but largely used in Mediterranean kitchens) and to compare the results between regular stones (without any antimicrobial added) and stones with Microban® incorporated (with triclosan as active agent).

The assays were performed with a clinical isolate of *Salmonella* Enteritidis and four kitchen bench stones - granite, marble and two kinds of silestone (a material mainly made from quartz and with Microban® incorporated) – cut into squares of 2.0 x 2.0 cm^2. Both adhesion and biofilm formation processes were assessed in 6-weel plates, at room temperature (25ºC), with shaking at 120 rpm and using LB as culture medium. Total cell counts of adhered bacteria were accomplished after 2 hours of incubation through epifluorescence microscopy enumeration of cells stained with DAPI, while biofilms biomass was evaluated by cell scraping and CFUs enumeration after a 48 hours growth period.

The results revealed that all stones tested are prone to bacterial adhesion and no considerable effect of triclosan was observed in both silestones, indicating that Microban® does not act upon the interactions between the bacterial cells and stones surface. On the other hand, biofilm outcomes point out a possible bacteriostatic activity of this compound since, even though bacterial load in silestones remained high (≈ $7x10^6$ cfu/cm^2), significantly higher numbers of bacterial cells were found in granite and marble.

In conclusion, given their propensity to bacterial colonization and biofilm growth, all these kitchen bench stones are not suitable for food processing. Moreover, Microban® incorporated in silestones had a poor performance in controlling microbial spread and, therefore, seems to be insufficient to prevent cross-contamination.