

Controlling relevant biofilms using bacterial secondary metabolites

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Bacteria in biofilms have resistance mechanisms that protect them against chemical stress. There has been a great deal of interest in developing strategies for biofilm control based on natural products. Previous experiences showed that supernatants resulting of the planktonic growth of an isolated dairy bacterium inhibited the growth of a range of bacteria, being the inhibition halos more evident for staphylococci. The goal of this study is to explore the biocontrol potential of the secondary metabolites released by the dairy bacteria against staphylococcal biofilms. The antimicrobial effect of those by-products against biofilms developed by *Staphylococcus aureus*, *S. epidermidis* and *S. sciuri* (relevant in medical area) were investigated using the microtiter plate technique, by means of CV and XTT to assess, respectively, attached biomass and respiratory activity. The role of temperature on the metabolite production and on its efficacy in biofilm control was also studied. The overall results showed that the preconditioning of the adhesion surfaces with the growth supernatant of the dairy bacteria reduced notably the total mass and activity of the biofilms, this reduction being more marked at 20 °C. Significant biofilm detachment and respiratory inactivation also occurred when the biofilms developed in the conditioned wells were later submitted to the attack with the same by-products. This study represents a step ahead in the possible use of natural by-products to control undesirable biofilms