Biosurfactant from *Lactococcus lactis* 53 inhibits microbial adhesion on silicone rubber

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The ability of the biosurfactant obtained from the probiotic bacterium *Lactococcus lactis* 53 to inhibit adhesion of four bacterial and two yeast strains, isolated from explanted voice prostheses, to silicone rubber with and without an adsorbed biosurfactant layer, was investigated in a parallel-plate flow chamber. The microbial cell surfaces and the silicone rubber with and without an adsorbed biosurfactant layer were characterized using contact angle measurements. Water contact angles indicated that the silicone rubber surface with adsorbed biosurfactant was more hydrophilic (48 degrees) than bare silicone rubber (109 degrees). The results obtained showed that the biosurfactant was effective in decreasing the initial deposition rates of *Staphylococcus epidermidis* GB 9/6 from 2100 to 220 microorganisms $cm^{-2}s^{-1}$, *Streptococcus salivarius* GB 24/9 from 1560 to 137 microorganisms $cm^{-2}s^{-1}$ and *Staphylococcus aureus* GB 2/1 from 1255 to 135 microorganisms $cm^{-2}s^{-1}$, allowing for a 90% reduction of the deposition rates. The deposition rates of *Rothia dentocariosa* GBJ 52/2B, *Candida albicans* GBJ 13/4A and *Candida tropicalis* GB 9/9 were far less reduced in the presence of the biosurfactant as compared with the other strains. This study constitutes a step ahead in developing strategies to prevent the microbial colonization of silicone rubber voice prostheses.