Antibacterial Coatings on Titanium Surfaces - DTU Orbit (13/12/2018)

Antibacterial Coatings on Titanium Surfaces: A Comparison Study Between in Vitro Single-Species and Multispecies Biofilm

Dental plaque is a biofilm that causes dental caries, gingivitis, and periodontitis. Most of the studies in antibacterial coatings have been conducted by in vitro single-species biofilm formation, but oral biofilm involves more than 700 different bacterial species that are able to interact. Therefore, new studies are focused on in vitro multispecies biofilm models that mimic in vivo biofilms. The aim of the present work was to study different antibacterial coatings onto titanium surfaces and evaluate the in vitro antimicrobial properties of the surfaces on two different bacterial species and an oral biofilm. The lactate dehydrogenase assay determined that treated samples did not affect fibroblast viability. In addition, the viability of microorganisms on modified samples was evaluated by a LIVE/DEAD BacLight bacterial viability kit. Although a decrease in viable bacteria onto, treated samples was obtained, the results showed differences in effectiveness when single-biofilm and oral plaque were tested. It confirms, as we expected, the distinct sensitivities that bacterial strains have. Thus, this multispecies biofilms model holds a great potential to assess antibacterial properties onto samples for dental purposes.

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