TITLE: IT IS CONCLUDED THAT THE THREE PRODUCTS INDIVIDUALLY OR IN SEQUENTIAL USE HAVE AN ANTIBIOFILM ACTION.

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ABSTRACT: Biosafety in dentistry aims to combat microbial contamination and the biofilm waterline of the dental equipment. The objective of this research was to analyze in vitro the antibiofilm activity of innovative products through different techniques (total biomass and metabolic activity). To quantify the total biomass of biofilms, crystal violet was used. Biofilm was formed on waterline specimens in polystyrene microplates (48 wells) containing 100µL of Mueller Hinton Broth (MH) with 1% of standardized bacterial inoculum (108 CFU/mL) of Escherichia coli (ATCC 25922), Pseudomonas aeruginosa (ATCC 27853) and Staphylococcus aureus (ATCC 29923) in each well. Incubation was carried out at 37°C for 24h with orbital shaking. The indirect quantification of the total biomass of biofilms was determined by measuring the absorbance at 570nm in a spectrophotometer. The metabolic activity of biofilms, after application of the products, was evaluated by reducing the tetrazolium salt (XTT) in a spectrophotometer (492nm). Biofilm biomass evaluation indicated that Product A ($p=0.003$) and Product AB ($p=0.019$) significantly reduced P. aeruginosa biofilm compared to the control. On the other hand, the evaluation of the biomass of the biofilm formed by S. aureus suggested that Product B ($p=0.018$) promoted greater antibiofilm action. Regarding biofilms formed by E. coli, Product A ($p=0.001$) and the sequential use of Products A+B+AB ($p=0.021$). For XTT compared to the control, treatment with Product A ($p=0.001$), Product AB ($p<0.001$) and sequential use of Products A+B+AB ($p=0.002$) significantly reduced metabolic activity from the biofilm of P. aeruginosa. In the biofilm formed by S. aureus, contrary to the results observed in the biomass assessment, Product B did not promote significant changes in metabolic activity (Product A: $p<0.001$; Product AB: $p=0.007$; sequential use of Products A+B+ AB: $p<0.001$). Considering the biofilm formed by E. coli, it was observed that Product B ($p=0.046$), Product AB ($p<0.001$) and the sequential use of Products A+B+AB ($p<0.001$) promoted a reduction in activity metabolic. It is concluded that the three products individually or in sequential use are innovative and demonstrate promising antibiofilm activity for applicability in water lines of dental equipment.

Keywords: antibiofilm activity, dental unit, chemicals.

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