

TITLE: BACTERIOPHAGE ISOLATION FROM DENTURE BIOFILM.

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ABSTRACT:

Denture biofilm contain microorganisms that can cause many infections. Researches have shown that the currently hygiene methods used are not totally effective to control it. In view of the pathogenic potential of the denture biofilm and its implication on health of the complete denture wearers, new hygiene methods need to be explored. Phage therapy has been proven to be effective, especially regarding multidrug-resistant strains. This research evaluated if it is possible to isolate bacteriophages from denture biofilm, and use it as an emergent way to control biofilm growing. Biofilm samples were collected from eighteen maxillary complete denture in an aseptic zone. To collect the biofilm, the dentures were rinsed with 10 mL phosphate buffered saline, and their internal surfaces were brushed for 2 minutes using a soft toothbrush. The biofilm suspension obtained was collected and vortexed for 2 minutes. Thereby, the suspension was centrifuged (5000g at 4°C) and 100 µL of the supernatant were added to 100 µL of bacterial inocula (10⁸CFU/mL) - (*Escherichia coli* – ATCC 25922, *Enterococcus faecalis* – ATCC 29212, *Streptococcus mutans* – ATCC 25175, *Pseudomonas aeruginosa* – ATCC 27853, and *Staphylococcus aureus* – ATCC 25923) and transferred to *Brain Heart Infusion* (BHI) *broth*. The mixture was thoroughly homogenized and incubated at 37°C for 20 minutes. After the incubation period, 4 mL preheated (45°C) BHI (0.7% agar) with samples + bacterial inocula were seed on Petri plates (60x15mm) with BHI (1.5% agar). The plates were incubated at 37°C for 7 days and the presence of lysis zones (bacteriophages) evaluated. The samples of dentures biofilm did not demonstrate any presence of bacteriophages. This result can be explained by the fact that acrylic dentures are mainly colonized by *Candida* spp. Thus, in this research, bacteriophages were not isolated from denture samples. Besides, future researches are needed to enhance the bacteriophages detection in mature biofilm dentures that had already been colonized with bacteria.

Keywords: Denture biofilm, bacteriophage, phage therapy.

Development Agency: nothing to declare.