In vitro evaluation of the efficacy of commercial peroxide-based cleansers solutions

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Complete dentures can be cleaned by mechanical, chemical and associated methods. Among chemical methods, alkaline peroxides are widely used as immersion solutions. However, the results of their antimicrobial effectiveness remain inconclusive. Therefore, the purpose of this in vitro study was to evaluate the antimicrobial efficacy of eight alkaline peroxides cleansers against *C. albicans* (Ca), *S. aureus* (Sa), *S. mutans* (Sm) and *E. faecalis* (Ef) strains through counting Colony Forming Units (CFU/mL) and epifluorescence microscopy (EM) analyses. Acrylic resin specimens (n=324) were obtained from circular metal matrix, sterilized and contaminated with suspension 10^6 CFU/mL of Ca and 10^8 CFU/mL of gram-positive bacteria. After contamination, the specimens were incubated (37°C/48h) and immersed (short cycle) in the following solutions: (C) Positive Control – PBS, (FI) Fixodent, (MI) Medical Interporous, (KU) Kukident, (EF) Efferdent Plus, (EQ) Equate, (KR) Kroger; (KI) Kirari and (CT) Corega Tabs. To determine the CFU counts, the specimens (n=10 of each group) were washed and immersed in Letheen medium from which were obtained aliquots that were seeded: Sabouraud Dextrose Agar (Ca), Mueller Hinton Agar (Sa), Mitis Salivarius Agar Base (Sm) and Tryptone Soya Agar (Ef). After incubation (37° C; 24 hours), the colonies were counted and the values of CFU/mL calculated. Data were processed following transformation into the formula log10 (CFU +1) and statistically analyzed using the Kruskal-Wallis test followed by Dunn test (α =0.05). For EM, the specimens (n=2 of each group) were stained (Live/Dead® BacLight™) and the images were analyzed regarding biofilm areas (total and living cells) by epifluorescence microscopy and compared using Wilcoxon test (α=0.05). There was significant CFU/mL reduction of Ca (p<0.001) in MI; of Sa (p<0.001) in FI, MI, KI and CT; of Sm (p<0.001) in FI, MI, KU, EQ, KR and KI and of Ef (p<0.001) in FI, MI and KU. The EM showed a significant reduction in the number of live cells of Sa (p<0.001) in FI, MI, KU and KI, of Sm (p<0.001) in MI, KU and CT, of Ca (p<0.001) and of Ef (p<0.001) for all cleansers when compared to C. The cleansers Medical Interporous, Fixodent and Kukident presented the best antimicrobial activity against the evaluated microorganisms.

Keywords: biofilms, denture cleansers, peroxide alkaline, complete denture.