

Evaluating the Effect of Four Chemical Disinfectants on Surface Roughness of Acrylic Resin Denture Base Material (in vitro evaluation)

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Abstract

Background and Aim: Using disinfectants for cleansing dentures is inevitable. Despite their favorable effect on reducing microorganisms, these chemical materials can cause undesirable effects on the surface of dentures. The aim of this study is to determine the effect of chemical disinfectant solutions on surface roughness of denture base materials.

Materials and Methods: In this experimental in-vitro study, 50 acrylic resin specimens were fabricated from 2 different brands of Meliodent and Acropars. Samples were placed in 4 groups of solutions (sodium hypochlorite 0.5%, vinegar 2.5%, sodium bicarbonate 5%, corega tabs) control group was placed in normal tap water. Samples were evaluated for the initial and secondary surface roughness. 1 specimen from each group was coated in PVD procedure and was assessed with SEM. Data were analyzed using ANOVA and Post-hoc tests and multiple comparisons.

Result: The initial measurements revealed no significant difference between two acrylic materials regarding the studied features ($P < 0.4$). The highest surface roughness in Meliodent group was observed in 0.5% sodium hypochlorite, which was significantly higher than other solutions ($P < 0.05$). In Acropars group, the highest surface roughness was caused by 2.5% vinegar, which was significantly higher than other solutions ($P < 0.05$). Corega tab presented the least amount of surface roughness on both acrylic resin specimens ($P < 0.01$).

Conclusion: Results showed that the effect of disinfectant solutions on surface roughness of Meliodent acrylic is higher than Acropars; and the least destructive effect was for Corega tabs. Usage of chlorinated solutions for disinfecting Meliodent acrylic and acidic solutions for Acropars is not recommended.

Keywords: *Acrylic resins; Prosthesis dental; Actions; Chemical*