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Effects of different solutions on the surface hardness of composite resin materials

Nuran YANIKOGLU[1)], Zeynep Yesil DUYMUS[1)] and Baykal YILMAZ[1)]

1) Department of Prosthodontics, School of Dentistry, Atatürk University

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Abstract:
In this study, the surface hardness of five light-cured composite resins were evaluated, namely: filled (Estelite), nanofil (Ælite), unfilled (Valux Plus), hybrid (Tetric ceram), and Ormocer-based (Admira) composite resins. The microhardness values of composite specimens were measured at the top and bottom surfaces after 24 hours or 30 days of immersion in different solutions (tea, coffee, Turkish coffee, mouthwash, cola, and distilled water). Comparisons were made with univariate analysis of variance and Duncan's multiple range test. It was found that rough specimens of reinforced nano-hybrid composite material immersed in cola for 30 days had the lowest surface hardness (33.20), whereas rough specimens of hybrid composite material immersed in cola for 24 hours had the highest surface hardness (156.00). In both tea and coffee, the top surfaces tended to be harder than the bottom ones. In conclusion, the five different materials exhibited different hardnesses, and that the hardness values of composite materials were statistically different in different immersion solutions.

Key words:
Composite resins, Surface hardness, Solution

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