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The effect of commonly used types of coffee on surface micro-hardness and color stability of resin-based composite restorations

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Abstract Objective: This study assessed the influence of commonly used types of coffee, in Saudi Arabia, on surface microhardness and color stability of microhybrid resin-based composite (Filtek Z250), nanofilled resin-based composite (Filtek Supreme) and organic modified ceramic composite (Ormocer).

Materials and methods: A total of 75 disk-shaped specimens were fabricated (25 discs from each type of material). After initial color and microhardness recording, samples were randomly divided into five groups (n= 5). Four groups of specimens from each material were immersed in 1 of 4 types of coffee (American, Arabic, Turkish and Espresso coffee) and the fifth group was stored in saline to serve as control. The specimens were immersed in the different types of coffee for 3 weeks. At the end of the test period, surface microhardness and color were measured again.

Results: It was observed that there is no significant difference in microhardness of the three tested materials after immersion in the different types of coffee. However, all resin-based materials showed significant color change when compared to control (saline). Filtek Z250 showed the least colorchange among the three materials followed by Ormocer. On the other hand, Filtek Supreme was the most common material prone to discoloration. Espresso coffee caused the most change in color followed by Turkish then American coffee. Nevertheless, Arabic coffee caused the least color change of the three materials.

Conclusions: Color stability of resin-based materials is affected by their different material composition.

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