

Color stability of current prosthetic composites under accelerated aging and immersion in a coffee solution

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The color stability of current prosthetic composites is unknown, although even though the quality of composite materials have has been improving. This study examined the intrinsic color stability of various current prosthetic resins (ceramic-polymers) after an accelerated aging process and the extrinsic color stability after the immersion process in the a coffee solution. By comparing the amount of discoloration after aging with that of without aging, the effect of the accelerated aging process on the external discoloration could be evaluated.

Three current prosthetic composites (Artglass, Targis, Sculpture), one light polymerized direct composite (Z100) and one dental porcelain control (Ceramco) were assessed. Six specimens of each material were subjected to accelerated aging process for a period of 400 hours and were immersed in the coffee solution for 1 week. Another six specimens were only immersed for one week without aging. The color changes (ΔE) of all the specimens were determined in using the CIE L*a*b* color order system with a reflected spectrophotometer.

The results were as follows

1. The prosthetic composite materials subjected to the accelerated aging test showed no significant difference in color changes ($p > .05$).
2. In the coffee solution immersion test after the aging process, the color changes of the Targis and Artglass groups were not different from that of the Z100 group, which showed the highest color changes.
3. In the immersion only test, a significantly high color change was observed in the sculpture glazing group.
4. The aging process influenced on the color changes more in the Targis, Artglass and Z100 groups than in the Sculpture and Ceramco groups.