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Effect of Storage Duration/Solution on Microshear Bond Strength of Composite to Enamel

Gul TOSUN[1)], Yagmur SENER[1)] and Abdulkadir SENGUN[2)]

1) Department of Pediatric Dentistry, Selcuk University, Faculty of Dentistry Campus
2) Department of Operative Dentistry, Selcuk University, Faculty of Dentistry Campus

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Abstract:
The aim of this study was to determine the effect of three storage solutions and two storage durations on microshear bond strength (μSBS) of a resin composite. Sixty non-carious human permanent molars were stored in three storage solutions (0.1% thymol, 10% formalin, and distilled water). Each tooth was separated mesio-distally into two parts. Specimens of the first part were stored for 24 hours, while specimens of the second part were stored for two months in the solutions. After each storage period, the enamel surface was covered with a composite resin in combination with an etch-rinse adhesive system. Specimens were then serially sectioned into sticks of 1 mm^2 bond area and subjected to μSBS test.
There were no statistically significant differences between the two storage periods for each solution ($p>0.05$). The thymol solution group showed lower μSBS values than those of distilled water for both storage periods ($p<0.05$). As for the formalin group, its μSBS values were not statistically different from those of distilled water and thymol groups at each storage period ($p>0.05$).
In conclusion, the thymol solution caused the μSBS of the resin composite to decrease when compared to both formalin and distilled water after 24 hours and two months. However, the μSBS of the resin composite was not affected by storage duration.

Key words:

Storage solution, Duration, Bond strength

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