

عنوان مقاله:

Effect of casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) on bond strength of a universal adhesive to demineralized dentin

محل انتشار:

مجله مواد و تکنیک های دندانپزشکی، دوره 13، شماره 2 (سال: 1403)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Objective: This study investigated the effect of casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) on the shear bond strength (SBS) of a universal adhesive in self-etch mode to demineralized dentin. Methods: Seventy-five dentin specimens were randomly divided into five groups (n=15) as follows: Group 1, intact dentin; Group 2, demineralized dentin receiving no remineralization agent; and Groups 3-5, demineralized dentin receiving CPP-ACP for 30, 90, and 180 seconds, respectively. All groups were bonded by Adper Single Bond Universal adhesive in self-etch mode. After 24 hours, the SBS test was conducted, and failure modes were recorded. The data were analyzed by one-way ANOVA, Tukey post-hoc test, and chi-square test at the significance level of $P < 0.05$. Results: The highest and lowest mean SBS values were observed in groups 1 (intact dentin: 29.58 ± 8.13 MPa) and 2 (demineralized dentin: 13.41 ± 4.85 MPa), respectively. ANOVA revealed a significant difference in SBS among the groups ($P < 0.001$). A pairwise comparison revealed that the SBS of demineralized groups (groups 3-5) was significantly lower than that of the intact samples ($P < 0.05$). Group 5, with CPP-ACP, applied for 180 seconds, showed a significantly higher SBS (20.74 ± 4.54 MPa) compared to group 2 ($P < 0.05$). Conclusions: Applying CPP-ACP paste for three minutes can increase the bond strength of the universal adhesive in self-etch mode to demineralized dentin, whereas shorter application times are not effective.

کلمات کلیدی:

Bond Strength, Casein phosphopeptide-amorphous calcium phosphate, Composite resins, dental adhesives, Self etch, Tooth demineralization

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