学位論文内容の要約

Effect of simulated dental pulpal pressure using fetal bovine serum for the bonding performance of contemporary adhesive to dentin
（胎児牛血清を応用した模擬歯髄圧が歯科接着材料の象牙質接着力に及ぼす影響について）

This study evaluated the effect of simulated pulpal pressure (SPP) conditions and storage time on the bond strength of four contemporary adhesive systems.

Extracted sound human molars were sectioned to exposed mid-coronal flat dentin surfaces and randomly divided into four groups according to the adhesives: Clearfil Megabond2 (CSE), Beautibond Xtreme Universal (BXU), G2-Bond (G2B), and Scotchbond Universal Plus (SBP). Each adhesive group was further divided (n=5 teeth) following the SPP conditions: control with no simulation (CTR), SPP with distilled water (DTW), and SPP with fetal bovine serum (FBS). Resin composite build-ups were prepared, and teeth were stored in water (37°C) for 24 hours (24h) and 3 months (3m). Following storage, teeth were sectioned to obtain resin-dentin bonded beams and tested under tension to determine the microtensile bond strength (μTBS). Data were statistically analyzed using Three-Way ANOVA and Tukey *post hoc* tests ($\alpha = 0.05$). Failure mode was observed using a stereoscope and scanning electron microscopy. A Weibull analysis of failure was performed.

The μTBS response was affected by adhesive systems, simulated pulpal pressure conditions, and storage time. CTR groups presented a higher overall bond strength than DTW and FBS, which were not significantly different from each other. Only for SBP after 24h the FBS group showed higher bond strength than the DTW group. The Weibull analysis showed that the bonding reliability and durability under DTW and FBS were inferior to CTR, and the 24h bonding quality of adhesives to dentin was superior to that of 3m. Regardless of the solution employed (DTW or FBS), all the adhesives' bond strength to dentin was remarkably reduced under SPP. Storage after 3m also decreased bond strength regardless of the SPP condition.

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