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[\[Image PDF \(873K\)\]](#) [\[References\]](#)**Modification of 4-META/MMA-TBB Resin for Safe Debonding of Orthodontic Brackets — Influence of the Addition of Degradable Additives or Fluoride Compound**[Rihito KAWABATA](#)¹⁾, [Tohru HAYAKAWA](#)²⁾ and [Kazutaka KASAI](#)³⁾

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Abstract:

The purpose of this study was to evaluate the performance of modified 4-META/ MMA-TBB resin cements (Superbond C&B) in terms of debonding orthodontic brackets easily and safely from enamel without the loss of proper bracket bond strength. Poly(DL-lactide-co-glycolide) (PLGA), calcium fluoride (CaF₂), or α -tricalcium phosphate (α -TCP) was added to the polymer powder of 4-META/ MMA-TBB resin, and the shear bond strength of orthodontic brackets to human enamel using modified resins was measured before and after 10,000-cycle thermal cycling test between 5°C and 55°C.

The modified resins tended to provide lower bond strength compared with the original 4-META/ MMA-TBB resin. However, α -TCP- or CaF₂-modified resin showed no significant differences in bond strength before and after thermal cycling. Moreover, there was a tendency of more residual resin remaining on the tooth surface after debonding, thereby suggesting a lower risk of enamel fracture.

In conclusion, α -TCP- or CaF₂-modified 4-META/ MMA-TBB resin seemed to allow easy and safe debonding of orthodontic brackets without loss of proper bracket bond strength

Key words:
[4-META/MMA-TBB resin](#), [Debonding](#), [Enamel](#)



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