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CEMENTS / FLUORIDE CONCENTRATION IN PLAQUE

AI PERMPIBOON: COMPARISON OF FLUORIDE CONCENTRATION  
IN PLAQUE AROUND ORTHODONTIC BRACKETS AND BOND FAILURE  
RATE OF BRACKETS RETAINED WITH A LIGHT-CURED HYBRID GLASS  
IONOMER CEMENT AND A COMPOSITE RESIN: A CLINICAL STUDY.  
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The proposes of this study are to evaluate the fluoride release of Fuji Ortho LC by comparing the fluoride concentration in plaque around orthodontic brackets retained with Fuji Ortho LC (light-cured hybrid glass ionomer cement) and System1+ (composite resin) and to evaluate the clinical failure of brackets retained with Fuji Ortho LC when the enamel surface was etched with 37% phosphoric acid.

Brackets in twenty-two patients were bonded with Fuji Ortho LC and System1+ by using split mouth design. Only twenty patients were used for comparison of fluoride concentration in plaque. Plaque formed in 24 hours around brackets bonded with Fuji Ortho LC and System1+ in each patient were collected at the first week after bonding and every month later until the ninth month. The fluoride content of the plaque samples was determined after microdiffusion procedure with a fluoride-sensitive electrode. The results show that the fluoride concentration in plaque around brackets retained with Fuji Ortho LC were significantly higher than fluoride concentration in plaque around brackets retained with System1+ ( $p < 0.001$ ) throughout the nine-month period. Fluoride concentration in plaque around Fuji Ortho LC was highest at the first week but rapidly decreased in the second month and gradually decreased from the second month to the sixth month and seemed stable after that. All of the twenty-two patients were used in comparison of bond failure rate of brackets retained with Fuji Ortho LC and System1+ when enamel surface was etched with 37% phosphoric acid. The numbers of bracket failure of each material were recorded at each appointment time. The failure of brackets retained with Fuji Ortho LC (3.2%) was not significantly different from that of brackets retained with System1+ (6.8%) ( $p > 0.05$ ). The results from this study indicate that light-cured hybrid glass ionomer cement with 37% phosphoric acid etching can serve as an alternative bonding material with the benefit of long-term fluoride release in the oral cavity.