

examination, the adhesive thickness of each group tended to significantly increase from 5.97 μm at 0% filler level to 73.37 μm at 45% filler level.

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Micro-shear bond strength of resin-bonding systems to cervical enamel.

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Purpose: To evaluate the micro-shear bond strength of current adhesive systems to cervical and mid-coronal enamel. **Materials and Methods:** Two commercially available resin adhesives were investigated; a self-etching primer system (Clearfil SE Bond, Kuraray) and a one-bottle adhesive system (Single Bond, 3M) intended for use with the total-etch wet-bonding technique were employed. Two regions of enamel, cervical and mid-coronal regions, were chosen from the buccal surface of extracted molars and were then bonded with each adhesive system and submitted to the micro-shear bond test. In addition, the conditioned enamel surfaces without any bond and the enamel-resin adhesive interfaces were studied morphologically using scanning electron microscopy (SEM). **Results:** No significant differences were found between the adhesive systems used ($P > 0.05$). However, for both bonding systems, cervical enamel showed significantly lower bonding than mid-coronal enamel ($p < 0.05$). The relatively lower bond strengths obtained from cervical enamel probably resulted from its aprismatic structure, which appears to be more resistant to dissolving in acids than prismatic mid-coronal enamel.

Clinical significance: There was significantly lower bond strengths to cervical than to mid-coronal enamel with both the self-etching primer system and the one-bottle adhesive system.

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In vivo Quantitative Analysis of Remineralization solution "R" of incipient enamel dental caries using Microradiograph

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Dental caries is a chronic disease that causes the destruction of tooth structure by the interaction of plaque bacteria, food debris, and saliva.

There has been attempts to induce remineralization by supersaturating the intra-oral environment around the surface enamel, where there is incipient caries.

In this study, supersaturated remineralized solution was applied to specimens with incipient enamel caries, and the quantitative analysis of remineralization was evaluated using microradiography. Thirty subjects volunteered to participate in this study. Removable appliances were constructed for the subjects, and the enamel specimen with incipient caries were embedded in the appliances. The subjects wore the intra-oral appliance for 15 days except while eating and sleeping. The removable appliance were soaked in supersaturated solution, saline, or Sensitime to expose the specimen to those solutions 3 three times a day, 5 minutes each time. After 15 days, microradiography was retaken to compare and evaluate remineralization.

The results were as the following:

1. The ratio of remineralized area to demineralized area was highest in the supersaturated solution group than in the saline or in the sensitime group.
2. In the supersaturated buffer solution, there was about 34.53% remineralization. There were 22.06% and 28.97% remineralization in the saline group and Sensitime group, respectively.
3. Remineralization in the supersaturated buffer solution group occurred in the deeper parts of the tooth, compared to the Sensitime group containing high concentration of fluoride.

As in the above results, the remineralization effect of remineralized buffer solution on incipient enamel caries has been proven. For clinical utilization, further studies on soft tissue reaction and the effect on dentin and cementum are necessary.