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## Antimicrobial and bond strength properties of dental adhesive containing zinc oxide nano-particles

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Secondary caries is the most important reason for replacement of dental resin restorations. The purpose of this study was to assess the effect of adding zinc oxide nano-particles to dental adhesives on their anti-microbial and bond strength properties. Forty-five human premolars were cut at the cement enamel junction. The specimens were classified into three groups, etched with 37% phosphoric acid for 15 seconds and rinsed for 30 seconds. Single Bond, Single Bond+5% zinc oxide and Single Bond+10% zinc oxide were used in the first, second and third groups, air dried for 20 seconds and cured. A composite cylinder of Z250 composite was bonded and cured for 40 seconds. The samples were immersed in water at 37°C for 24 hours. Shear bond strength was measured and the mode of failure was determined under a stereomicroscope. For anti-bacterial testing, 10 samples of each group were assessed by direct contact test; 10µL of bacterial suspension was transferred into tubes containing adhesives and incubated for one hour; 300µL of brain heart infusion broth was added to each tube and after 12 hours, 50µL of bacteria and broth were spread on blood agar plates and incubated for 24 hours. Number of bacterial colonies was counted. Data were analyzed by ANOVA. The colony count significantly decreased in the second and third groups compared to the first group. No significant difference in dentin bond strength was noted among the groups. Incorporation of zinc oxide nano-particles into dental adhesives increases their anti-microbial properties without affecting their bond strength.

### Biography

Mahshid Saffarpour has completed his DDS from Qazvin University of Medical Sciences and Post-graduate studies from Tehran University of Medical Sciences. He was the Head of Restorative Department, Dentistry School of Qazvin University and at present, working as Associate Professor of Dentistry School, Alborz University of Medical Sciences. He has published 5 papers in Iranian and international journals and two books in his field.

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