

Effect of Silver Nanoparticles on Antimicrobial Property of Acrylic Denture Base

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Abstract

Objective: To investigate the effect of silver nanoparticles on the antimicrobial property of the acrylic denture base with different ratios of silver nanoparticles.

Materials and Methods: Heat polymerizing acrylic resin (Triplex hot Ivoclar vivadent, Liechtenstein) and silver nanoparticles (Zeomic AJ10N Sinanen Zeomic Co., Ltd., Japan) were used. The specimens were divided into four groups according to the concentration of silver nanoparticles incorporated to acrylic resin: 0, 0.25, 0.5 and 1.25% by weight. The antimicrobial activity against *Staphylococcus aureus* was assessed by Japanese Industrial Standard (JIS Z 2801:2000). The dispersion of silver nanoparticles was evaluated by Scanning Electron Microscope (SEM).

Results: This study showed that only 0.5% and 1.25% silver-nano containing acrylic can against *Staphylococcus aureus*, assessed by JIS Z 2801:2000. SEM images confirmed the presence of silver-nano embedded to the polymer matrix. Nanoparticles are homogeneously dispersed over the specimen surface.

Conclusions: The addition of silver-nano to acrylic resin at least 0.5% by weight revealed antimicrobial activity.

Keywords: Silver nanoparticles, Acrylic denture base, Antimicrobial property

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