

1478 Adsorption Effect of Hydroxyapatite to Oral Streptococci

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Journal of Dental Research Vol.81, A200-1478, San Diego Abstracts, 2002

Objectives: Hydroxyapatite(HA) is a component of biological hard tissue, including tooth surface enamel, and has high ability to adsorb oral streptococci. To investigate whether HA is a useful agent for Dental Drug Delivery System (3DS), a new system for specifically removing oral streptococci from the oral cavity, the relationship between bacterial adsorption and crystal growth of HA heated at different temperatures

(0,200,800 and 1200 °C) was analyzed by in vitro assay using 550 nm light absorbance.

Methods: Oral streptococci (*Streptococcus mutans*, *S. sobrinus*, *S. sanguis*, *S. mitis*, *S. salivarius*, *S. anginosus*) mixed with HA or saliva-coated HA (s-HA) in PBS were incubated for 90 min at 37 °C. After standing of the mixtures at room temperature, the supernatants were analyzed for the difference in optical densities before and after the application of HA or s-HA, to assess bacterial adsorption levels. The bacterial adsorption to HA was also observed by SEM. **Results:** Non- and 200 °C-heated HA and s-HA showed strong adsorption to all streptococci in comparison with high heat-treated (800 °C and 1200 °C) HA and s-HA. Interestingly, s-HA heated at 800 °C showed a high property of adsorption to *S. mutans* and *S. mitis* (more than 80%) and low property to *S. anginosus* and *S. salivarius* (less than 20%). Moreover, SEM observation indicated that the adsorption levels were dependent on crystal size of HA. **Conclusions:** These results suggested that non- or lower heat-treated forms of HA might be useful as agents for 3DS.