



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Trevor W. Kimball</b>	<b>Project Number</b> <b>J1115</b>
<b>Project Title</b> <b>The Effects of Peri-implantitis on Hydroxyapatite Coated Dental Implant Systems</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this study was to find which hydroxyapatite coated root form dental implant system was most resistant to the acidic environment produced by peri-implantitis.</p> <p><b>Methods/Materials</b> Eight root form dental implants from Centerpulse, Steri-Oss, Spectra System, and a new, "generic" company were acquired, weighed, placed in a 25 percent citric acid solution (to simulate the conditions of the acidic exudates that surround the implant during peri-implantitis), then taken out and weighed at ten minute increments. The implants were weighed six times for a total of 60 minutes in solution. The final weight of the implants with the hydroxyapatite coating completely dissolved was used to calculate the rate of deterioration as a percentage. These measurements were used to find the average failure time of each implant, with failure point set at a two-thirds loss of hydroxyapatite.</p> <p><b>Results</b> The Centerpulse and Steri-Oss implant samples failed at an average time of 40 minutes in solution; while the Spectra implants failed at 30 minutes and the generic failed at 20 minutes in solution.</p> <p><b>Conclusions/Discussion</b> This study suggests that implant systems vary in their response to the acidic environment produced by peri-implantitis and that the coating of the hydroxyapatite is more superior in some implant systems than others. Due to the high cost of dental implants the sample size for my study was small, hindering the statistical significance.</p>	
<b>Summary Statement</b> I studied hydroxyapatite coated titanium root form dental implant systems from four different companies to see which of their hydroxyapatite coatings best resisted the acidic environment created by peri-implantitis.	
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