



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

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Project Title
In Pursuit of a White Smile: Do Whitening Toothpastes and Electric Toothbrushes Really Help?

Abstract

Objectives/Goals
My objective is to determine if whitening toothpastes and electric toothbrushes actually work better than regular toothpastes and manual toothbrushes, and do the extra costs give you whiter teeth. Based on advertising and ingredients, my hypothesis was that Colgate Total Advanced Whitening toothpaste would work better with the Sonicare electric toothbrush.

Methods/Materials
I purchased and tested a regular and a whitening toothpaste from the two leading brands, Crest and Colgate. For the toothbrushes, I used a manual (Oral-B), an electric that spins in a circular motion (Oral-B), and an electric that gives a rapid side-to-side motion (Sonicare). I emptied some eggs and let the shells, which represented teeth, sit in either coffee, cola, or apple juice for 48 hours. Then, I washed off any residue, and let the stains dry. After this, I brushed the egg shells for 30 seconds with 1/8 of a teaspoon of toothpaste, and let them sit for an additional 90 seconds with the toothpaste still on. Next, I washed off the toothpaste, and let the egg dry. I visually rated the improvement in stain removal and later, I compared the stains to a dental stain chart.

Results
My testing showed that Colgate Total Advanced Whitening toothpaste was the best toothpaste with a score of 37.5 points, and the Oral B electric toothbrush was the best toothbrush with a score of 47 points. Surprisingly, the Oral B manual toothbrush was a close second with 43 points. The best combination for whitening was Colgate Total Advanced Whitening toothpaste with the manual toothbrush.

Conclusions/Discussion
Based on the numerical results my conclusions are that whitening toothpastes whiten teeth better than regular toothpastes, and Colgate toothpastes work better than Crest toothpastes, at whitening teeth. Electric toothbrushes do not significantly help whiten teeth. Paying a higher price for and using a whitening toothpaste does give you whiter teeth, however using the higher cost electric toothbrush does not significantly improve whitening.

Summary Statement
Do the extra costs associated with whitening toothpastes and electric toothbrushes result in whiter teeth?

Help Received
Father helped with experiment design, Dr. Beemer, DDS provided the VITAPAN Classical Stain Guide, Mother helped with editing