



Efficacy  
in vitro study

## Novel Method for Efficacy Assessment of Whitening Agents

Cardoso PEC, Barros RMC, Marquez UML, Cardoso J. Novel Method for Efficacy Assessment of Whitening Agents. J Dent Res 89 (Spec Iss A), 0835, 2010.

### Objective

To evaluate the whitening efficacy of four in-office whitening systems using a direct measurement method, which evaluated the discoloration of a stain solution prepared with the most common food color used in beverages and industrial food

### Materials

- Caramel solution
- 25% hydrogen peroxide
- 25% hydrogen peroxide + ferrous complex
- UVA lamp

### Methodology

A caramel solution (CS) was prepared in water, using Caramel Class IV AP 100 (Sethness Products Company, USA), at a proportion of 0.1% in weight (w/v). Five experimental groups were designed: Group 1. Control: caramel solution (CS) not submitted to any discoloration process; Group 2. CS+HP 25% (Lase Peroxide, DMC, Brazil); Group 3. CS+HP 25% + visible light LED for 45 min (480nm, Whitening Lase Plus, DMC, Brazil); Group 4. CS+HP 25% and Fe<sup>2+</sup> (Zoom 2 gel, Discus Dental, USA); 5. CS + HP 25% and Fe<sup>2+</sup> + UVA light (360-400nm) during 45min (Zoom AP lamp, Discus Dental). Five repetitions were conducted for each experimental group and the results were measured using a Shimadzu spectrophotometer UV-1650PC (Shimadzu Scientific Instruments, Japan) and converted into a percent that indicates the color that remained in the solution.

### Results

One-Way ANOVA showed all groups were statistically different except for Groups 1 and 2, which were statistically similar.

### Conclusion

The 25% hydrogen peroxide gel associated with ferrous complex reached higher discoloration than the 25% hydrogen peroxide gel. The 25% hydrogen peroxide gel associated with ferric complex submitted to UVA light emission offered the highest whitening potential when compared to all the other groups.

### Efficacy Assessment of Whitening Agents

Color Remaining in Solution

