

# Tooth bleaching results: Ozcure Activator Machine and Opalescence 35%

## Introduction:

A promising bleaching technique using ozone gas has entered the market that is claimed to be revolutionizing the way tooth bleaching is performed. The Ozcure is a combination of ozone gas and the bleaching potential of the Epixure Activator Machine with the gold standard Opz 35% (Fig. 1) with the VITA Easy shade (VE) and the VITAPAN 3D-MASTER Tooth Guide (TG).

## Aim:

1. To test tooth colour assessment ability of two methods with the same. Tooth colour was measured on the first day (VE) and the VITAPAN 3D-MASTER Tooth Guide (TG).
2. To use VITA Easy shade (VE) as easy and accurate method to determine tooth shade?
3. How the Epixure Activator Machine (Oz) bleaches tooth and is comparable to Opalescence 35%?

## Objectives:

This *in vitro* study compares the bleaching effect of the Epixure Activator Machine (Oz) with Opalescence 35% (Op). Two different tooth colour assessment methods were used: VITA Easy shade (VE) and the VITAPAN 3D-MASTER Tooth Guide (TG).

## Methods and materials:

50 teeth were used in the study. 33 incisors, 8 canines and 9 premolars.

The teeth were evenly divided into 3 groups of 15 teeth. The groups were Epixure (Oz), Opalescence (Op) and Control (Co).

The teeth were bleached following manufacturer's instructions and tooth colour readings were taken digitally (VE) and visually (TG). Tooth colour readings were taken before the treatment, at 1 hour and 24 hours after each bleaching procedure. A total of 304 tooth colour readings were recorded. All teeth received a total of 3 treatments, each lasting for 1 hour.

Data was recorded with VIS and tested with the Friedman test using randomized block design with P < 0.05.



Figure 1: Each tooth was individually stored in a randomized order.



Figure 2: Opalescence (Op) containing 35% Carbamide Peroxide



Figure 3: Teeth placed into position containing 35% Carbamide Peroxide



Figure 4: Bleaching guard used for bleaching



Figure 5: Control (Co) using distilled water



Figure 6: Teeth placed in position



Figure 7: Bleaching guard used for Control



Figure 8: Phase 1 - Ozcure Activator Machine bleaches with ozone gas for 1 hour



Figure 9: Teeth placed in position



Figure 10: Bleaching guard with teeth placed over with Ozcure



Figure 11: Flow sensor attached to gear to measure flow rate at 50bars per minute



Figure 12: Phase 2 - Bleaching tray placed in position over tooth



Figure 13: Bleaching tray placed around tooth for 24minutes



Figure 14: VITAPAN 3D-MASTER Tooth Shade (TG)



Figure 15: Visual colour assessment



Figure 16: VITA Easyshade (VE)



Figure 17: Digital colour assessment

## Results:

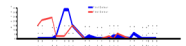


Figure 18: Visual (VE) assessment of Opz. The red graph represents the final tooth colour readings. This graph has moved to the left comparing to the blue graph (first tooth colour readings). These results show a significant lightening of the tooth after the bleaching procedure with Opz.

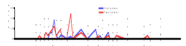


Figure 21: Digital (VE) assessment of Opz. The red graph represents the final tooth colour readings in this graph. There is a concentration of tooth colour readings to the area 1312 to 1351.

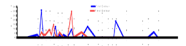


Figure 19: Digital (VE) assessment of Opz. The final tooth colour results (red graph) has shifted between 1361 and 1381.1. The red graph has moved to the left comparing to the blue graph. This means that the tooth colour did lighten. When the blue graph is compared to the red graph in the region 1361 to 1381.1 there is a peak of 31.25% in the 1382 area (blue graph).

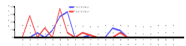


Figure 20: Visual (VE) assessment of Opz. The blue graph represents the final tooth colour readings in this graph and shows a significant lightening in the tooth colour after the bleaching procedure with Opz.

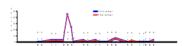


Figure 22: Digital (VE) assessment of Opz. This graph represents the first and final data for tooth colour readings for group Opz.

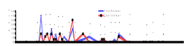


Figure 23: Visual (VE) assessment of Opz. When the blue graph was interpreted to follow the first and final tooth colour readings were almost the same. Using digital (VE) assessment for Opz there was no tooth colour change after the bleaching procedure with Opz.

## Discussion:

A significant lightening of the tooth was observed with both systems, when the tooth were bleached with tooth colour assessment before and after treatment. When the tooth were bleached with tooth colour assessment using VE was more reflect than digital tooth colour assessment with VE. VE reflect a strong ozone production tooth colour readings and it is difficult to see. The tooth colour read taken with VE followed over the whole specimen of tooth colour.

## Abstract:

**Tooth bleaching results: Ozcure Activator Machine and Opalescence 35%**  
A promising bleaching technique using ozone gas has entered the market that is claimed to be revolutionizing the way tooth bleaching is performed. Objective: This *in vitro* study compares the bleaching effect of the Ozcure Activator Machine (Oz) with Opalescence 35% (Op) using two different tooth colour assessment methods: VITA Easyshade (VE) and the VITAPAN 3D-MASTER Tooth Guide (TG). Methods: Ninety nine teeth were used in the study. 33 incisors, 8 canines and 9 premolars. The teeth were evenly divided into 3 groups of 15 teeth, the (Oz), (Op) and Control (Co). Teeth were bleached following the manufacturer's instructions and tooth colour readings were taken digitally (VE) and visually (TG). All teeth received 2 cycles of treatment. Colour readings were taken before the treatment, at 1 hour and 24 hours after each bleaching procedure, using both colour determination methods. A total of 304 tooth colour readings were recorded. The control used using the Friedman test using randomized block design with P < 0.05. Results: Tooth became significantly lighter between the first and last tooth colour readings with Opz (Op P=0.002 and Op P=0.008). There was no significant difference between bleaching obtained with the Oz and Op. A significant difference was found comparing the Oz and Op with the control group. Colour readings for Op VE P=0.001 and Op P=0.006 were at variance with Op-reading. Tooth colour did not increase between treatments. Conclusion: The Oz bleached teeth successfully, but even so colour increase and reduce. The bleaching potential of the Oz is comparable to the gold standard Op. VE was clear consistent, not easy to use and gave visible tooth colour readings for individual tooth, but the lower P values.

## Conclusion:

Oz bleached tooth successfully and Oz bleaching potential is comparable to the gold standard Op. The Oz bleaching and VE was colour increase and reduce. VE was clear consistent, not easy to use and gave visible tooth colour readings and the lower P values. Oz is a good future prospect in the tooth bleaching industry, but need further investigation.

## Acknowledgements:

The author of the paper would like to acknowledge Prof. E.A. Gorman for her contributions.

## Reference:

1. Sulfemas M, Adly M, Ross J. Development and evaluation of a method to *in vitro* assess the effectiveness of tooth bleaching. J Dent 2003; 31: 483-422.
2. Sulfemas M, Adly M, McDonald E, Ross J. The bleaching depth of 35% hydrogen peroxide based in-office product: a study in vivo. J Dent 2008; 36: 33-40.
3. Bond J. How ozone acts and how it exerts therapeutic effects. In Lynch E, editor. Ozone: the revolution in dentistry. London: Quintessence publishing; 2006: 15-25 [Crossref].
4. Bond J, M, Boyon A, Siddiqui N, Sise A, Schmidt J, Lynch E. History of the clinical application of ozone. In Lynch E, editor. Ozone: the revolution in dentistry. London: Quintessence publishing; 2006: 23-30.
5. Brown A, Lynch E. Evaluation of ozone to deliver ozone in dentistry. In: Lynch E, editor. Ozone: the revolution in dentistry. London: Quintessence publishing; 2008: 57-65.