



## Benefits of ACP

in vitro study

# Whitening Treatment Combined with Bioactive Materials

Pinheiro HB, Cardoso J and Cardoso PEC. Whitening Treatment Combined with Bioactive Materials - in situ study. J Dent Res (Spec Iss A), 0801, 2012.

### Objective

To investigate the influence of bioactive materials on whitened surfaces and dentin using Knoop hardness test

### Materials

- Eight human teeth
- 15% carbamide peroxide, potassium nitrate, fluoride (Opalescence PF, Ultradent)
- 16% carbamide peroxide, potassium nitrate, fluoride, calcium, phosphate (NiteWhite ACP, Discus Dental)
- 15% carbamide peroxide, potassium nitrate, fluoride & glass-ceramic crystalized glass P2O5 –Na2O–CaO–SiO2 (Opalescence PF, Ultradent & Biosilicate, Vitrovita)
- 15% carbamide peroxide, potassium nitrate, fluoride + potassium nitrate, fluoride, calcium, phosphate (Opalescence PF, Ultradent + Relief ACP, Discus Dental)

### Methodology

Eight human teeth were sectioned into five wafers per tooth and divided into five experimental groups (n=8). The specimens were treated and mounted in intra-oral palatal retainers. Whitening treatments were performed for 14 days according to manufacturer's instructions. Six Knoop hardness measures were taken for each specimen, three before and three after treatments. The data were compared by Student's t-test ( $\alpha = 0.05$ ).

### Results

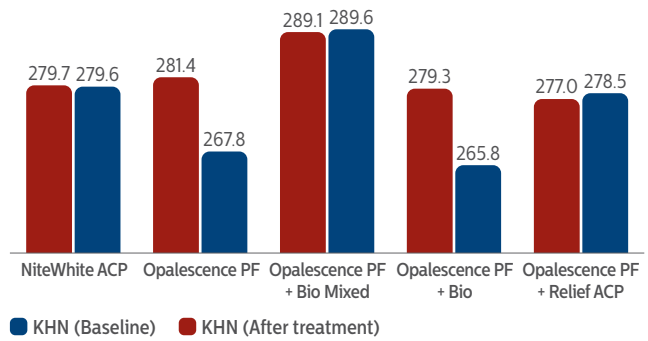
Opalescence PF caused hardness decrease on enamel and dentin ( $p < 0.05$ ). NiteWhite ACP and the bioactive materials had a positive influence on the hardness of bleached enamel and dentin, except for the effect on enamel of the Biosilicate material when applied for five minutes one time per week, which showed a decrease in KHN.

### Conclusion

Whitening treatment can lead to alterations in the dental structure. Minimizing or eliminating the alterations in the whitened dental structure could bring benefits to patients. Adding bioactive materials to whitening treatments can minimize or eliminate the alterations in the dental structure.

### Pre- and Post-Treatment Enamel Hardness

KHN



### Pre- and Post-Treatment Dentin Hardness

KHN

