

## THE INFLUENCE OF PH CHALLENGE OF SWIMMING POOL WATER ON AESTHETIC PROPERTIES OF NOVEL DENTAL COLORED RESTORATIONS

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### ABSTRACT

**Objectives:** Maintenance of aesthetic properties of tooth colored restorations is of primary importance especially when these restorations are subjected to challenge of PH in swimmers mouth who are exposed for long hours to chlorinated water during their work out, so the aim of this study was to evaluate the effect of pH-challenge of swimming pool water on the color changes of four new novel colored restorations: nanocomposite, resin modified glass ionomer, poly acid modified composite and new giomer glass ionomer for different interval periods.

**Methods:** Four tooth colored restorations nanocomposite (TPH<sup>3</sup>, DENTSPLY) giomer glass ionomer (Beautifil, SHOFU), resin modified glass ionomer (Photac Fil.3M/ ESPE) and polyacid modified composite (F2000,3M/ESPE) were used in this study. 25 disc-shaped specimens (5x3mm) of each tested material were prepared using split Teflon mould. Five specimens were used as control while the other 20 specimens were divided into two groups. The first group (10 specimens) were immersed in distilled water while the second group (10 specimens) were subjected to pH-challenge regimen, in which they were immersed in a swimming pool water prepared by dissolving 5.0mg chlorine powder in 1000 ml water with PH adjusted at 7.5 for 3/hours daily at room temperature, the specimens were immersed in distilled water for ten seconds to be washed after each pH exposure. Both groups were stored for one month and three months. After each storage period the specimens were tested for quantitative color changes using Quanta Environmental Scanning Electron Microscope. Data were statistically analyzed using Multivariate ANOVA and Tukeys test.

**Results:** Statistical analysis of change in color from the control value for all groups revealed a significant difference between water and PH exposure media as (P<0. 001). Statistical analysis of change in color between all groups revealed a significant difference due to material type (P<0. 001).

There was statistically significant difference between means of colour changes after storage for one month and three months in challenge of pH showing effect of exposure time. On the other hand four tested restorative materials were highly susceptible to color changes after exposed to challenge of PH, new Giomer glass ionomer showed the least susceptibility to colour change while F2000 polyacid modified composite showed the statistically significantly highest mean color change.

**Clinical Significance:** Aesthetic colour stability and discoloration properties of new novel nanocomposite and new version of giomer glass ionomer are severely lacking and limited in dental literature which may provide guidance for selection of nanocomposite and other novel aesthetic restoration for clinical usage especially for swimmers who stayed for long time in chlorinated water with high PH.

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