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Effect of Different Bleaching Materials On Color of Stained Resin Composite By Photocatalytic Treatment

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ABSTRACT

In this work, ZnO, and TiO_2 (Hombikat UV 100) and TiO2 doped with 0.5 % of Pt, and Pd metals, that prepared by photo deposition method. The bare TiO_2 and prepared samples were characterized by powder X-ray diffraction (XRD), UV–vis diffuse reflectance spectra (UV–vis DRS), nitrogen adsorption BET, and atomic force microscopy (AFM) were evaluate the effect of photochemical activation by kinds of semiconductors (ZnO, TiO2, Pt/TiO2, and Pd/TiO2) in bleaching gels with UV-light type A, with the purpose of accelerating the process of pigmented component oxidation on Filtek Z350XT resin composite (3M ESPE).The bare catalysts and metal doped prepared where testing by taken twenty-five disc-shaped of the Filtek Z350XT resin composite specimens (3M ESPE) were used in this study, then immersion in tea staining solutions, after that they were randomly divided into five groups specimens (each group n = 10) according to the type of whitening chemical materials treatment applied(ZnO, Pt/TiO_2, TiO_2, Pd/TiO2 and TiO2/UV 100). The color measurements were taken: at baseline, after immersion and after chemical treatment procedures by using a stereomicroscope (vita easy shade device). The results recorded, tabulated and statwastically analyses.The results showed the highest mean color difference ΔE values were: group two Pt/TiO2, group three TiO2, group five TiO2 / UV 100, Pd/TiO2 and group one ZnO respectively. However, there was no statistically significant difference in-group three TiO_2. In addition, a whitening effect was demonstrated with group two Pt/TiO_2 and group five TiO_2 / UV 100 showed statistically significant lowest in a color space compared to others groups. In addition, results show immersion tea staining solutions had a positive influence on the color changes of resin composite.*

Keywords: ZnO, Pt/TiO_2, TiO_2, Pd/TiO2, bleaching.