Original article

Effect of Remineralization on Color Change of Bleached Tooth

Panita Suttisakpakdee[1], Sirivimol Srisawasdi[2]

[1]Esthetic Restorative and Implant Dentistry Master's Program, Faculty of Dentistry, Chulalongkorn University, Bangkok

[2]Department of Operative Dentistry, Faculty of Dentistry, Chulalongkorn University, Bangkok

Abstract

The aim of this *in vitro* study was to investigate the effect of remineralization and time on the color and microhardness change of bleached teeth using 10 % carbamide peroxide (CP) and 40 % hydrogen peroxide (HP). Seventy-two 6x6x2 mm^3 enamel slabs were prepared from human premolars. The specimens' color and Vickers' microhardness were recorded at baseline (T0). The specimens were divided into six groups: twelve specimens per group. Two groups were treated with 10 % CP with or without casein phosphopeptides and amorphous calcium phosphate (CPP-ACP) (10 % CP and 10 % CP/CPP-ACP, respectively), two groups were treated with 40 % HP with or without CPP-ACP (40 % HP and 40 % HP/CPP-ACP, respectively), one group received no bleaching (CON) and another group received only CPP-ACP treatment without bleaching, (CON/CPP-ACP). The CPP-ACP groups were treated with CPP-ACP twice daily for five minutes for seven days after completing their respective protocol. The color change and Vickers' microhardness were recorded at three time points after treatment; one day (T1), two weeks (T2), and one month (T3). After one month, the tooth color changed (ΔE) in all groups at every time point; however, significant ΔE was found only at T3 for the 10 % CP and the CON/CPP-ACP groups ($p<0.05$). Microhardness tended to decrease from the baseline (T0) value at each time point. There were significant differences between time points in microhardness (ΔVHN) in the 40 % HP, CON, and CON/CPP-ACP groups. A relationship between ΔE and ΔVHN was found in the 10 % CP and 10 % CP/CPP-ACP groups. In summary, tooth whiteness decreased in the 10 % CP group from T1 to T3. CPP-ACP can prevent color relapse in the 10 % CP/CPP-ACP and CON/CPP-ACP groups. Microhardness improved in the 10 % CP/CPP-ACP group compared with the 10 % CP group at T3. Both tooth whiteness and microhardness were stable for at least one month when CPP-ACP was used as an intervention in the 10 % CP/CPP-ACP group.

Keywords: Color relapse, Tooth bleaching, Remineralization, CPP-ACP

Received Date: Nov 20,2017 **Accepted Date:** Mar 23,2018

doi: 10.14456/jdat.2018.28

Correspondence to:

Panita Suttisakpakdee. Esthetic Restorative and Implant Dentistry, Faculty of Dentistry, Chulalongkorn University. 34 Henri-Dunant Road, Patumwan, Bangkok 10330 Thailand Tel: 0942695498, Email: clearlymoon@gmail.com