

DENTAL EDUCATION

April 09-10, 2018 | Amsterdam, Netherlands

Application of bleaching agents on completely set CEM cement: SEM and EDX-ray microanalysis of set CEM cement after application of different bleaching agents

Yalda Alemzadeh

Tabriz University of Medical Science, Iran

The present study evaluated the element distribution in completely set calcium-enriched mixture (CEM) cement after application of 35% carbamide peroxide, 40% hydrogen peroxide and sodium perborate as commercial bleaching agents using an energy-dispersive x-ray microanalysis (EDX) system. The surface structure was also observed using the scanning electron microscope (SEM). Twenty completely set CEM cement samples, were prepared in the present in vitro study and randomly divided into 4 groups based on the preparation technique as follows: the control group; 35% carbamide peroxide group in contact for 30-60 min for 4 times; 40% hydrogen peroxide group with contact time of 15-20 min for three times; and sodium perborate group, where the powder and liquid were mixed and placed on CEM cement surface 4 times. Data were analyzed at a significance level of 0.05 through the one Way ANOVA and Tukey's post hoc tests. EDX showed similar element distribution of oxygen, sodium, calcium and carbon in CEM cement with the use of carbamide peroxide and hydroxide peroxide; however, the distribution of silicon was different ($P < 0.05$). SEM of the control group showed plate-like and globular structure. Sodium perborate was similar to control group due to its weak oxidizing properties. Globular structures and numerous woodpecker holes were observed on the even surface on the carbamide peroxide group. The mean elemental distribution of completely set CEM cement was different when exposed to sodium perborate, carbamide peroxide and hydrogen peroxide.

yalialmz1991@gmail.com