

1: [J Dent.](#) 2004 Sep;32(7):581-90.[Links](#)**A safety study in vitro for the effects of an in-office bleaching system on the integrity of enamel and dentine.**[Sulieaman M](#), [Addy M](#), [Macdonald E](#), [Rees JS](#).

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**OBJECTIVE:** The aim of this study was to investigate safety concerns with bleaching procedures by studying the effects of a high concentration hydrogen peroxide (HP) in-surgery bleaching product on enamel and dentine. **METHOD:** Flat enamel and dentine samples embedded in epoxy resin were prepared from human third molar teeth. Erosion of enamel: groups of enamel samples were treated with 35% HP then citric acid (CA) or brushing with toothpaste or CA alone and water alone. Enamel Loss was measured using a profilometer. Abrasion/erosion of dentine: groups of dentine specimens were treated as follows: Group 1--brushed with water for 30 min. Group 2--brushed with 35% HP for 30 min. Group 3--power bleached for 30 min and then Group 4--brushed with toothpaste for 1 minute. Group 5--water soaked for 30 min followed by brushing with toothpaste for 1 min. Group 6--orange juice soaked for 30 min followed by brushing with toothpaste for 1 min. Treatment effects were measured using a profilometer. Hardness tests: enamel and dentine specimens were hardness tested using a Wallace indenter prior to and post bleaching. Scanning Electron Microscopy: enamel and dentine specimens were taped and the exposed tissue treated with 35% HP and then studied under scanning electronmicroscopy (SEM). **RESULTS:** Enamel erosion: bleaching enamel samples had no measurable effect on enamel. Pre-bleaching had no significant effect on subsequent CA erosion or brushing. Abrasion/erosion of dentine: no significant differences were found between treatments 1-5 with little change from baseline detected. Orange juice (Group 6) produced considerable and significantly more erosion than other treatments. Hardness tests: there were no significant changes in hardness values for enamel and dentine. SEM: there was no evidence of any topographical changes to either enamel or dentine. **CONCLUSION:** Using one of the highest concentrations of HP for tooth bleaching procedures and maximum likely peroxide exposure, there was no evidence of deleterious effects on enamel or dentine. It must be assumed that studies which reported adverse effects on enamel and or dentine of bleaches reflect not the bleach itself but the pH of the formulation used.

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