

After Bleach Treatments for Reducing Roughness by SPM

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Objective: The purpose of this study was to examine the effects of the after bleach treatments for reducing surface roughness, possibility of hypersensitivity and color recession.

Materials and Methods: 16 extracted human teeth were employed in this study. 8 teeth were bleached by Shofu Hi-Lite containing 35% hydrogen peroxide; another 8 teeth were bleached by Discuss NITE White Excel 10% Carbamide peroxide. The usages of bleach were according to the manufacturer's instruction. Tooth was sectioned into 5x4mm and polished to 3 mm thickness; the enamel surfaces were finally mirror-finished by #4800 waterproof paper (Buelher). We used 3 treatment materials after bleaching, fluoride containing paste (Shofu Merserge Plus), CPP-ACP (Casein PhosphoPeptide-Amorphous Calcium Phosphate; GC MI-Paste), and nano-hydroxyapatite (average particle size 20nm; Sangi Renamel). By using Scanning Probe Microscope (SPM, Seiko Instruments) with 20nm contact stylus, the mean surface Roughness (Ra) and the microstructure image of enamel surface were analyzed. For color recession test, specimens were dipped in standardized concentration coffee solution for 10 minute after treatment and color change were measured by colorimeter Shofu Shade Eye NCC. Statistical analysis was performed by ANOVA (Scheffe-test).

Results: The average surface Roughness (Ra) of treated with Merserge plus was significantly increased (bleached by Hi-Lite baseline Ra value 6.5 to treated 25.4 and bleached by NITE White Excel 10.6 to 20.5). While treated by Renamel, the Ra value did not change compare to the baseline and pre-polished. Enamel surface became more rough by Hi-lite than by NITE White Excel. MI-Paste showed almost the same result as the control surface (saline; no treatment). Dipping test revealed no significant color change between each treatment.

Conclusions: It was concluded that restoring roughed surface of bleached enamel was improved by Renamel treatment. Nano apatite containing paste showed possibility of surface restoration effect in vitro.