Evaluation of color changes of white spot lesions treated with three different treatment approaches: an in-vitro study

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Objective: To qualitatively and quantitatively assess the color changes effect and the color stability of the resin infiltrant on white spot lesions (WSLs), in comparison with nano-hydroxyapatite (nano-HA) toothpaste and microabrasion.

Methods: WSLs were artificially created on sixty human premolars enamel surfaces and randomly assigned to equal four groups (n = 15 each): nano-HA toothpaste, microabrasion (Opalusture), resin infiltrant (Icon) treatment, or artificial saliva (control group). The color change (ΔE) of each specimen was measured by dental spectrophotometer (Vita Easyshade) at different time points: baseline, after WSLs' creation, after application of treatments, one month, three and six months after treatments application.

Results: The ΔE value did not differ significantly for the four groups at baseline measurement before treatment (p>0.05). Icon resin infiltrant improved the color of WSLs significantly immediately after its application, giving the lowest ΔE value (3.00±0.59), when compared to other treatments (p<0.001). There were no significant changes in ΔE (p>0.05) for all groups during the follow up intervals (one month, three and six months after treatments application).

Conclusion: Resin infiltrant can improve the color of WSLs and restore the natural appearance of enamel better than nano-HA toothpaste and microabrasion.

Keywords: White spot lesions. Resin infiltration. Nano-hydroxyapatite. Microabrasion.