Development and efficacy of a 5% hydrogen peroxide toothpaste

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Objective:
Develop and evaluate the efficacy of Colgate® Optic White™ Pro Series toothpaste containing 5% hydrogen peroxide (w/v).

Methods:
The whitening efficacy of Colgate® Optic White™ Pro Series toothpaste relative to a non-whitening toothpaste was evaluated by in-vitro methods. Artificially stained bovine teeth were brushed with an abrasive toothpaste until initial L*, a*, and b* values approached those of human teeth. The teeth were brushed for two minutes with a 1:1 slurry of toothpaste to artificial saliva, rinsed with water, and L*, a*, and b* values were collected with a spectrophotometer. This process was repeated 14 times. A whiteness index, ΔW* (where W*= ((L*-100)2+(a*)2+(b*)2)1/2) was reported. Analysis of variance was used to compare the mean ΔW* value for each product with $p<0.001$ indicating significant differences between products.

Results:
Colgate® Optic White™ Pro Series toothpaste containing 5% hydrogen peroxide was developed using a unique combination of ingredients to deliver whitening efficacy demonstrated by in-vitro testing. After 14 treatments, the ΔW* value for the toothpaste containing 5% hydrogen peroxide and non-whitening toothpaste was -11.5 ± 1.9 and -1.7 ± 0.8, respectively. The ΔW* value for the 5% hydrogen peroxide toothpaste was statistically superior to the ΔW* value for the non-whitening toothpaste ($p<0.001$).

Conclusion:
Colgate® Optic White™ Pro Series toothpaste containing 5% w/v hydrogen peroxide was found to be effective in whitening teeth in an in-vitro brushing model.

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