RESEARCH SUMMARY

An *in vivo* efficacy study of a new detergent free whitening dentifrice

A study to assess the efficacy of a new detergent free, whitening dentifrice *in vivo* using QLF planimetric analysis

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Objective

To determine the effects of a detergent-free, whitening dentifrice using an *in vivo* plaque regrowth model with the novel application of QLF as a planimetric analysis tool.

Method

A total of 20 subjects took part in a double blind, single-centre, crossover study in which slurry rinses were the only form of plaque control over a 5-day period. Following a washout and prophylaxis the subjects used 2 daily rinses in the absence of all other plaque control methods. Subjects returned to the clinic on the afternoon of day 5 when plaque was disclosed and assessed by the plaque index and area using both a photographic and novel fluorescent planimetric technique. A further 9-day washout was carried out and the rinse period repeated to ensure that each subject had used both experimental and comparator slurries.

Results

Twenty subjects completed the trial. The test product showed a significant inhibition of plaque re-growth (16.9%) compared with a fluoride-matched comparator using the Turesky index ($P < 0.0001$), the photographic planimetric technique (17.5%) ($P < 0.0001$) and the novel QLF technique (18.4%) ($P < 0.0001$).

Conclusion

The results confirm that plaque inhibition capability of a detergent-free whitening dentifrice is at least as effective as a fluoride matched comparator. QLF is a promising tool for disclosed plaque quantification.

IN BRIEF

- Planimetric methods for the assessment of plaque are more objective than traditional indices.
- Qualitative light induced fluorescence (QLF) offers a novel and effective planimetric system.
- The removal of a detergent from a dentifrice does not adversely affect plaque regrowth.
- The addition of whitening agents does not adversely affect plaque regrowth.

COMMENT

Occasionally, a scientific paper is published, the title of which is only understood by a small group of professionals working in the relevant field. To all other readers, the complexity of the title is confusing and therefore, the contents of the paper, however valid, are passed over and ignored.

This title may well have the same effect. However, the paper describes a simple and elegant piece of research, that demonstrates how the properties of a recently developed toothpaste are tested against those of a 'standard' toothpaste.

This new toothpaste has some different ingredients from the standard, but would, one would hope, perform at least as well. Relying on the universally accepted principle that dental plaque is responsible for caries and periodontal disease, the new toothpaste is tested for how much plaque grows on teeth when this is used, rather than the standard toothpaste.

The innovative part of research is that the authors have introduced a new method for measuring plaque on teeth. In order to prove that the new toothpaste is at least as good as the standard, this method can precisely measure the area of plaque present on each tooth surface. This research was partly funded by the manufacturer of the new toothpaste. However, this is largely irrelevant as the research also clearly shows that the new method is capable of improving on conventional methods.

Disclosing plaque has been an integral part of dental health education for decades, particularly with children. Generations of dental students and dental hygienists have diligently disclosed, recorded and calculated the presence of plaque and then used the results to motivate (either praise or punish) our patients. Whilst this method is valid within the clinical environment, it has significant shortcomings in the world of dental research.

Other methods have been employed, also with limitations. However, in the modern world, digital cameras and computer technology have now allowed this same principle of disclose, record and calculate to be developed to a level at which plaque presence can be accurately determined.

Quantitative light-induced fluorescence (QLF) is a way for our leading dental scientists to disclose, record and calculate plaque presence. The method is unlikely to be applicable to the 'real world' of clinical dentistry but only by such research can the profession make sensible and informed choices about what products we use and recommend to our patients.

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