Extrinsic Whitening

• Demand for whiter teeth has grown dramatically in the past decade. A multitude of oral care products on the market today claim to provide a whitening benefit.

• Extrinsic stains, those forming on the surface of the tooth, are caused by factors such as diet, poor hygiene, and smoking.

• Dentifrice formulations with whitening agents provide an efficient way to help remove and prevent extrinsic stains. Common ingredients include those that work by physical stain removal (e.g., silica) and those that work by chemical stain control (e.g., sodium hexametaphosphate).

SODIUM HEXAMETAPHOSPHATE AND EXTRINSIC WHITENING

• Sodium hexametaphosphate provides a chemical whitening benefit due to its:
  - Strong attraction to calcium hydroxyapatite
  - Ability to disrupt the pellicle to remove extrinsic stain
  - Retention on tooth surface to prevent new extrinsic stain

• In vitro and in vivo data demonstrate the extrinsic whitening benefits of sodium hexametaphosphate in various oral care product formulations (e.g., dentifrice, chewing gum)

0.454% Stannous Fluoride Dentifrice and Tooth Staining: Composite Evidence


CONCLUSION

• Use of 0.454% stannous fluoride sodium hexametaphosphate dentifrice yielded significant reductions in tooth stain in clinical studies, without increased extrinsic stain accumulation in longer term randomized controlled trials, or appreciable evidence from spontaneous consumer reports.

OBJECTIVE

This meta-analysis was conducted to evaluate tooth staining with a 0.454% stannous fluoride sodium hexametaphosphate dentifrice.

MATERIALS AND METHODS

• Evidence of extrinsic tooth stain formation or removal for a single phase 0.454% stannous fluoride sodium hexametaphosphate dentifrice (Crest® Pro-Health™) was assessed from clinical trials outcomes and spontaneous consumer reports.

• The inclusive meta-analysis involved 14 randomized controlled trials to assess stain removal or deposition under controlled usage conditions, and spontaneous reports of all types from uncontrolled usage, over periods of up to 6 months.

• Extrinsic stain was assessed by measurement (Lobene Index), clinical examination and/or solicited or unsolicited report.

RESULTS

• The meta-analysis included 175 subjects in controlled trials of stain removal, 1041 subjects in other randomized controlled trials with 2-6 month usage, and 2246 spontaneous consumer reports of all types. The clinical trials population exhibited considerable diversity with respect to demographics and baseline stain.

• In the composite stain removal trials, 0.454% stannous fluoride sodium hexametaphosphate dentifrice yielded significant (p<0.05) reductions in tooth stain, ranging from 76% at Week 2 to 89% at Week 6. In prospective 2-6 months trials, there was 1 report of tooth stain with the 0.454% stannous fluoride dentifrice, not significantly different in occurrence versus dentifrice controls.

• Tooth stain accounted for less than 0.1% of spontaneous dentifrice reports, well below unsolicited testimonials.