

Stannous fluoride toothpastes reduce the gingival index more than sodium fluoride toothpastes

Are dentifrices containing stannous fluoride effective in reducing gingivitis?

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A review of the effects of stannous fluoride on gingivitis. J Clin Periodontol 2006; 33:1-13

Data sources Medline and the Cochrane Central Register of Controlled Trials were used to identify sources of data.

Study selection Title and abstracts were screened independently. Randomised controlled clinical trials of >6 months duration that used gingivitis or plaque levels as outcome measures were selected.

Data extraction and synthesis The mean values and standard deviations were extracted. In studies where standard errors of the mean were reported, standard deviations were calculated by the authors based on the sample size. Weighted means of baseline and of end of trial were calculated with the software Cochrane Collaboration Review Manager (version 4.2; The Cochrane Collaboration, Oxford, England) using a random-effects model. A meta-analysis for stannous fluoride (SnF) mouth rinse and dentifrice/ mouthrinse formulations was not performed because there were insufficient data.

Results Fifteen papers were included in the review. For SnF dentifrices, a statistically significant reduction in gingivitis was noted in comparison with control [weighted mean difference (WMD), 0.15 (gingival index) and 0.21 (gingivitis severity index); test for heterogeneity $P < 0.00001$, $I^2 = 91.1\%$ and $P 50.03$, $I^2 = 80.1\%$, respectively]. There were inconsistent results for plaque reduction. On using the plaque index, no differences were found, whereas meta-analysis of the Turesky index gave a WMD of 0.31 ($P 50.01$; test for heterogeneity $P 0.0001$, $I^2 = 91.7\%$).

Conclusions The use of SnF dentifrices results in greater gingivitis and plaque reduction compared with a conventional dentifrice. The precise magnitude of this effect was difficult to assess because of a high level of heterogeneity in study outcomes.

Commentary

As described in more detail below, the take-home message is that, yes, SnF toothpaste is more effective in reducing the gingival index than sodium fluoride (NaF) toothpaste. Therefore, for patients with gingival inflammation, given a similar cost for the toothpastes, one could consider recommending SnF toothpaste.

This systematic review delineating these data, although confusingly written, convincingly demonstrates this point. Figure 1 and Table 1 below extrapolate from the review's data to provide another perspective. Figure 1 indicates that for all experiments identified in which NaF and SnF toothpaste were directly compared,¹⁻⁶ the change in gingival index with use of SnF toothpaste was consistently more than the change in gingival index when a NaF toothpaste was used.

Similarly, Table 1 shows the number-needed-to-treat (the number of people needed to use SnF for one more person to have a change in gingival index) similarly indicates a consistent benefit of SnF compared with NaF.

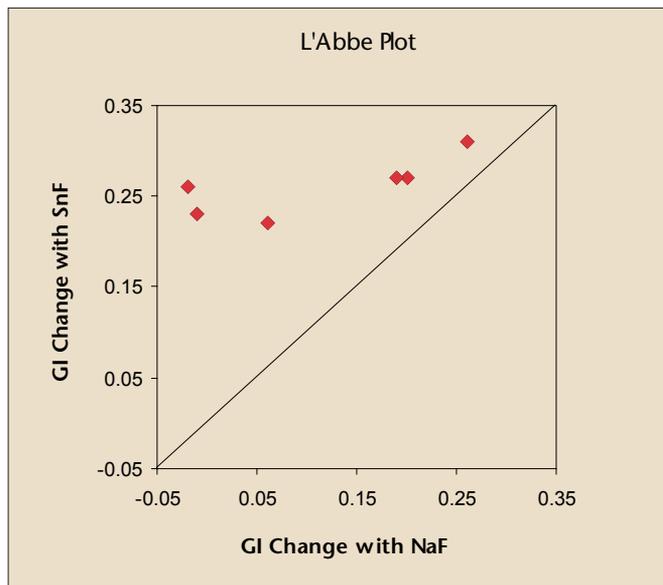


Figure 1. L'Abbe plot showing the change in Gingival Index (GI) in six studies

Another interesting observation is that approximately half of the identified studies were supported by a NaF toothpaste marketer, and the other half were supported by a SnF toothpaste marketer. Yet, given these conflicting perspectives, all the studies point in the same direction.

The lingering question, however, is how does the gingival index relate to the clinical situation? If the reports and the systematic

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Table 1. Change in gingival index (GI) in six studies and numbers-needed-to-treat (NNT)

Author	Change in GI			NNT
	SnF	NaF	Absolute risk difference	
Perlich et al. ¹	0.27	0.2	0.07	14
Biswanger et al. ²	0.31	0.26	0.05	20
Biswanger et al. ³	0.22	0.06	0.16	6
Williams et al. ⁴	0.26	-0.02	0.28	4
Mankodi et al. ⁵	0.23	-0.01	0.24	4
McClannahan et al. ⁶	0.27	0.19	0.08	13

review had converted the gingival index to a proportion of sites that bleed on probing (a typical clinical measure that is relatively easily obtained), this would be more clinically useful. Even better would be a measure of the teeth saved when using SnF or NaF toothpaste. Although this may seem ridiculous at first blush, this measure has in fact been successfully employed.⁷ Furthermore, from a patient’s perspective, tooth loss is the most relevant outcome.

Practice point

SnF toothpaste is more effective in reducing the gingival index than NaF toothpaste. The magnitude of the effect is small, however, and the clinical effectiveness remains unclear.

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