

## Clinical report . . . . .

# The Effectiveness of a Sodium Monofluorophosphate Dentifrice on Dental Hypersensitivity

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WITH THE INTRODUCTION of dentifrices containing fluorides a clinical impression has developed that some dentifrices containing fluoride have a beneficial effect on cervical hypersensitivity of the teeth. Although no appraisal of such effectiveness from a dentifrice containing sodium monofluorophosphate has been reported, several investigators have reported on other dentifrices and agents for the control of cervical hypersensitivity.<sup>1-7</sup>

The purpose of this double-blind clinical study was to determine the effectiveness of a dentifrice containing a 0.76 percent sodium monofluorophosphate (MFP) in the treatment of cervical hypersensitivity, as compared to a placebo dentifrice (non-MFP). The placebo dentifrice differed from the MFP dentifrice only in that it did not contain the 0.76 percent sodium monofluorophosphate. The pH of both dentifrices was 6.0.

### METHODS

The study utilized 59 adult subjects, males and females, who were selected on the basis of having a dental history and clinical evidence of cervical sensitivity to heat and cold stimuli. Subjects having had periodontal surgery within six months were excluded. The initial phase of the study consisted in establishing thermal (heat and cold) sensitivity baselines for each of the participating subjects over a period of three weeks. The subject's response to heat and cold stimuli was established (in terms of degrees centigrade) through use of a technique which utilized a calibrated thermoelectrical device previously reported.<sup>5, 6</sup> One observer recorded all stimuli responses and the data concerning the response to the stimuli were recorded on a special score sheet.

This study was supported by a grant from the Colgate-Palmolive Company, New York, New York.

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The tooth and exact anatomical area of the tooth which was utilized to establish a baseline value was recorded so that the thermoelectrical device could be accurately repositioned in the same area of the tooth at subsequent examinations. Three measurements, at one-week intervals, of each of the stimuli (heat and cold) were made on all of the subjects and the averages of these three measurements were utilized to statistically stratify the 59 subjects into two groups.

The first group consisted of 31 subjects who were assigned to the dentifrice containing 0.76 percent sodium monofluorophosphate (MFP), and the second group consisted of 28 subjects who were assigned to use the placebo, or non-MFP, dentifrice. All of the subjects were instructed to brush their teeth in a normal manner at least two times per day. The subjects returned at monthly intervals for resupply of dentifrices and tooth-brushes during the three months of the test period.

After three months' use of the particular dentifrice that was assigned to them, the subjects returned and three measurements, at one week intervals, of each of the stimuli (heat and cold) were made again. From the initial baseline sensitivity response values, and those obtained at the completion of three months' use of the dentifrices, it was possible to ascertain whether or not a reduction in dental hypersensitivity had resulted from use of the dentifrice containing 0.76 percent sodium monofluorophosphate.

### RESULTS

The data was statistically analyzed on both a "per subject" and a "per tooth basis" and the results of these analyses are presented in Tables 1-4. Tables 1 and 2 refer to a comparison of the MFP and non-MFP dentifrice groups for both cold and heat parameters on a "per subject basis." Tables 3 and 4 also refer to a comparison of the MFP and non-MFP dentifrice groups, but on a "per tooth" basis.

Table 1 indicates that when the cold stimulus data after treatment or exposure is analyzed on an individual

TABLE 1  
Analysis of Cold Response Data\*  
Individual Subject Basis  
Summary of Results

Group	N	Mean Change	S.D.	"t" Value
MFP	31	- 1.70	2.92	
Non-MFD	28	- 0.54	1.90	1.76**

\*In reference to "cold response" data, the dentifrices are exerting a beneficial effect on dental hypersensitivity if "after treatment" values are *Less* than the "before treatment" values.

\*\*Statistically significant at .05 level (one-tailed test).

TABLE 2  
Analysis of Heat Response Data\*  
Individual Subject Basis  
Summary of Results

Group	N	Mean Change	S.D.	"t" Value
MFP	31	+ 1.33	3.93	1.97**
Non-MFP	28	- 0.49	2.93	

\*In reference to "heat response" data, the dentifrices are exerting a beneficial effect on dental hypersensitivity if the "after treatment" values are *Greater* than the "before treatment" values.

\*\*Statistically significant at .05 level (one-tailed test).

TABLE 3  
Analysis of Cold Response Data\*  
Individual Tooth Basis  
Summary of Results

Group	N	Mean Change	S.D.	"t" Value
MFP	32	- 1.64	2.95	1.92**
Non-MFP	32	- 0.43	1.96	

\*In reference to "cold response" data, the dentifrices are exerting a beneficial effect on dental hypersensitivity if the "after treatment" values are *Less* than the "before treatment" values.

\*\*Statistically significant at the .05 level (one-tailed test).

TABLE 4  
Analysis of Heat Response Data\*  
Individual Tooth Basis  
Summary of Results

Group	N	Mean Change	S.D.	"t" Value
MFP	32	+ 1.25	3.96	2.25**
Non-MFP	32	- 0.71	2.89	

\*In reference to "heat response" data, the dentifrices are exerting a beneficial effect on dental hypersensitivity if the "after treatment" values are *Greater* than the "before treatment" values.

\*\*Statistically significant at .05 level (one-tailed test).

subject basis, the mean changes between the subjects using the MFP dentifrice (-1.70 units) was significantly different from the subjects using the non-MFP dentifrice (-0.54 units). This difference is statistically significant at the 95 percent level of confidence ("t" value = 1.76) and indicates a beneficial effect for the MFP dentifrice in reference to the treatment of dental hypersensitivity. Table 2 indicates that when the heat stimulus data is also analyzed on an individual subject basis, the mean changes between the subjects using the MFP dentifrice (+1.33 units) was significantly different from the subjects using the non-MFP dentifrice (-0.49 units). This difference was also statistically significant at the 95 percent level of confidence ("t" value = 1.97) and indicates that the MFP dentifrice

had a beneficial effect on dental hypersensitivity.

Table 3 indicates that when the cold stimulus data is analyzed on an individual tooth basis, the mean changes between the subjects using the MFP dentifrice (-1.64 units) was significantly different from the subjects using the non-MFP dentifrice (-0.43 units). This difference was statistically significant at the 95 percent level of confidence ("t" value = 1.92) and indicates a beneficial effect for the MFP dentifrice in reference to the treatment of dental hypersensitivity. Table 4 indicates that when the heat stimulus data is also analyzed on an individual tooth basis, the mean changes between the subjects using the MFP dentifrice (+1.25 units) was significantly different from the subjects using the non-MFP dentifrice (-0.17 units). This difference was also statistically significant at the 95 percent level of confidence ("t" value = 2.25) and indicates a beneficial effect from the use of the MFP dentifrice.

#### SUMMARY

A double-blind clinical study was conducted over a three-month test period, utilizing 59 adult subjects, to determine the effectiveness of a dentifrice containing 0.76 percent sodium monofluorophosphate (MFP) in reducing the incidence of cervical hypersensitivity of the teeth. Baseline values for thermal sensitivity (heat and cold) were initially established and the subjects were then assigned to use of either the MFP dentifrice, or the non-MFP (placebo) dentifrice. The subjects utilized the dentifrices in a normal routine manner (at least two times per day) for a period of three months, after which time thermal response values were again determined. The data obtained was analyzed on both an individual subject basis and an individual tooth basis.

#### CONCLUSIONS

The results of this study indicate that the routine use of a dentifrice containing 0.76 percent sodium monofluorophosphate exhibited a beneficial effect on cervical hypersensitivity of the teeth.

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