

Clinpro™ 5000

1.1% Sodium Fluoride Anti-Cavity Toothpaste



Technical Product Profile

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INTRODUCTION

Caries Development

Teeth are naturally covered by dental plaque that contains bacteria. Some of the bacteria, including mutans streptococci and lactobacilli, produce acids when they metabolize fermentable carbohydrates such as glucose, sucrose, fructose, or cooked starch. The acids produced by this metabolism enter into the pores of sound tooth enamel or exposed dentin and dissolve minerals in the tooth structure. This causes a loss of calcium and phosphate from the tooth, resulting in demineralization.¹⁻⁴

Plaque bacteria + Fermentable carbohydrates => Acids
Acids + Tooth enamel and dentin => Demineralization¹

Demineralization is first visible as a “white spot lesion” on the surface of the tooth enamel. Left untreated, this process can continue, eventually leading to cavitation.

Caries Prevention

Saliva serves as the body’s natural defense against tooth decay by both physical and chemical means. Saliva protects the tooth by clearing carbohydrates and acids from the tooth surface and buffering the acids generated by carbohydrate metabolism. Saliva contains minerals such as calcium and phosphate that replace the minerals dissolved from the tooth during demineralization.⁵

Saliva is also a carrier of fluoride. Fluoride in sufficient quantities combines with the demineralized hydroxyapatite of tooth structure to form fluorapatite in a process known as remineralization. Fluorapatite is more resistant to acid challenge than naturally occurring hydroxyapatite. This minimizes the formation of dental caries.

Unfortunately, the amount of fluoride in saliva is low. Fluoride in whole saliva is approximately 0.32 µmol/l in areas with low fluoride concentration in drinking water.⁶ Because of the known beneficial effects of fluoride on teeth, fluoride is added to drinking water and to toothpaste, rinses, gels and other topically-applied products. Topical application of fluoride can raise the concentration of fluoride in saliva up to 1000-fold.⁷

Caries rates have decreased dramatically in the United States and in Western Europe over the past 40 years due to community water fluoridation, increased oral hygiene awareness and the use of fluoride-containing toothpaste.⁸⁻¹² Fluoride delivered through community water fluoridation and fluoridated toothpaste has been shown to be a cost-effective public health measure for preventing tooth decay.^{11,12}

The amount of fluoride in toothpaste in the United States ranges from slightly less than 1000 ppm to 5000 ppm. Fluoride toothpaste with a concentration of ≤1500 ppm F⁻ ion is sold to consumers through retail locations such as drugstores. Toothpaste with >1500 ppm F⁻ ion is available only through professional application in the dental office or on a prescription basis.

There is evidence of a positive dose response for concentrations of sodium fluoride in toothpaste ranging from fluoride-free to 5000 ppm F. Large-scale clinical trials have demonstrated that higher concentrations of sodium fluoride in toothpaste deliver greater caries effectiveness.¹³⁻¹⁸ Likewise, higher concentrations of sodium fluoride in toothpaste exhibit greater anticaries effectiveness on root surfaces.^{19,20}

Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste was developed specifically for patients who need the benefits of higher concentration fluoride toothpaste. This toothpaste can be applied to enamel and exposed dentin through daily tooth brushing. The product provides a high concentration of fluoride during brushing to help remineralize demineralized enamel and to aid in the prevention of tooth decay.

PRODUCT DESCRIPTION

Clinpro 5000 toothpaste is a prescription-strength white toothpaste that contains 5000 ppm fluoride and an innovative tri-calcium phosphate ingredient with a vanilla mint flavor. The product is intended to be used once daily in place of conventional toothpaste, unless instructed otherwise by a physician or dentist.

Clinpro 5000 toothpaste is packaged in a 4oz (113g) tube with an accompanying professional package insert containing instructions for proper use of the product.

This product is for once a day use in place of regular toothpaste for patients 6 years of age or older. Allergic reactions and other idiosyncrasies have rarely been reported. You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch, or call 1-800-FDA-1088.

INDICATIONS

Clinpro 5000 toothpaste is indicated for use as part of a professional program for the prevention and control of dental caries.

COMPOSITION

Clinpro 5000 toothpaste contains 1.1% sodium fluoride and an innovative tri-calcium phosphate ingredient which is sold exclusively through 3M ESPE. Each gram of Clinpro 5000 toothpaste contains 5mg of fluoride ion in a neutral pH base consisting of water, sorbitol, hydrated silica, glycerin, polyethylene-polypropylene glycol, flavor, polyethylene glycol, sodium lauryl sulfate, titanium dioxide, carboxymethyl cellulose, sodium saccharin and tri-calcium phosphate.

EVALUATIONS

Fluoride has been shown to reduce the incidence of caries.²¹ Studies have shown that higher concentrations of sodium fluoride in toothpaste deliver statistically significantly greater caries efficacy.¹³⁻²⁰ Over-the-counter toothpastes typically contain 1100 ppm fluoride ion. Clinpro 5000 toothpaste contains 5000 ppm fluoride ion, more than 4 times the amount in regular toothpaste.

Fluoride Uptake

While the concentration of fluoride in toothpaste is important, the amount of fluoride that is delivered to demineralized tooth structure is equally, if not more, important. *In vitro* laboratory testing was conducted to determine the fluoridating efficiency of Clinpro 5000 toothpaste compared to that of other fluoride-containing preparations.

Methodology

Enamel chips were prepared from bovine incisors. The tooth surfaces were ground flat and then polished. The indigenous fluoride level of each chip was determined. The chips were demineralized using a solution of 0.1M lactic acid and 0.2% carbopol. Following demineralization, the chips were treated for 30 minutes by soaking in a slurry of fluoride preparation and water. The fluoride preparations consisted of the following:

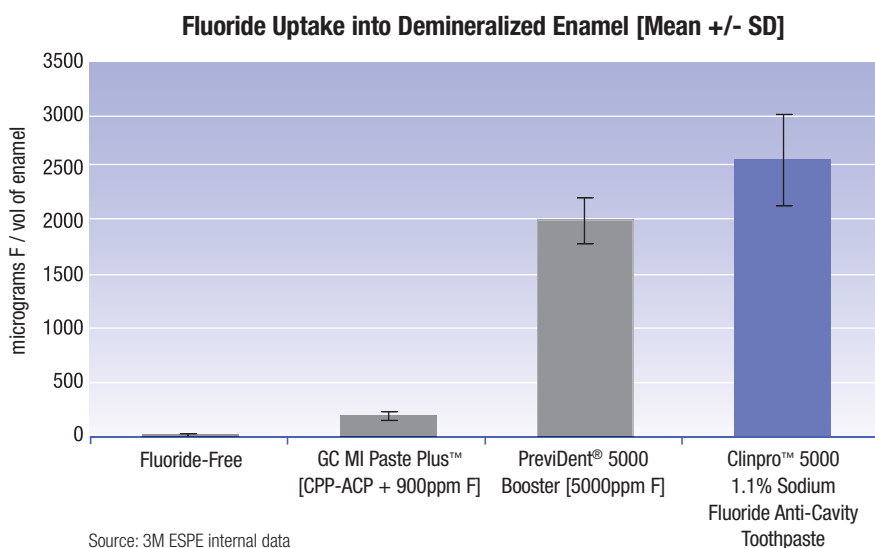
- fluoride-free deionized water
- GC MI Paste Plus™ (900 ppm F-)
- PreviDent® 5000 Booster (5000 ppm F-)
- Clinpro 5000 toothpaste (5000 ppm F-)

Following treatment, chips were re-analyzed using the same technique used to determine indigenous fluoride level. The fluoride level after treatment was compared to fluoride level before treatment to determine fluoride uptake.

Results

Clinpro 5000 toothpaste and PreviDent 5000 Booster exhibited statistically significantly greater fluoride uptake than GC MI Paste Plus. This suggests that the anticaries potential of 5000 ppm fluoride-containing toothpastes is greater than that of non-prescription toothpastes, and is reflective of the dose response relationship observed clinically.

Clinpro 5000 toothpaste exhibited greater fluoride uptake than PreviDent 5000 Booster, suggesting that the anticaries potential of Clinpro 5000 toothpaste is at least as good as PreviDent 5000 Booster.



Fluoride Bioavailability

“White spot lesions” are an early sign of tooth decay that, if left untreated, will progress to frank caries lesions. Treatment of these demineralized areas with fluoride can stop progression and reverse the decay process through remineralization. An *in vitro* pH cycling experiment was conducted to assess the fluoridating and remineralizing efficiency of Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste and other fluoride toothpaste formulations. The pH cycling model is a widely accepted and validated method to evaluate the anticaries potential of toothpaste formulations. The results from the pH cycling experiment are often used to fulfill the fluoride uptake into demineralized enamel requirement of the American Dental Association’s Acceptance Program Guidelines for Fluoride-Containing Toothpaste.

In this experiment, specimens were subjected to 20 days of pH cycling. The purpose of this *in vitro* laboratory experiment was to determine the ability of Clinpro 5000 toothpaste and several other preparations to:

- promote fluoride uptake
- promote remineralization

Methodology

Enamel specimens were cut from bovine incisors. Each specimen was soaked in a solution of 0.1M lactic acid and 0.2% carbopol to produce artificial caries lesions. Baseline surface microhardness measurements were made. Eighteen specimens were then randomized to each of the following treatment groups:

- fluoride-free deionized water
- GC MI Paste Plus™ (900 ppm F-)
- PreviDent® 5000 Booster (5000 ppm F-)
- Clinpro 5000 toothpaste (5000 ppm F-)

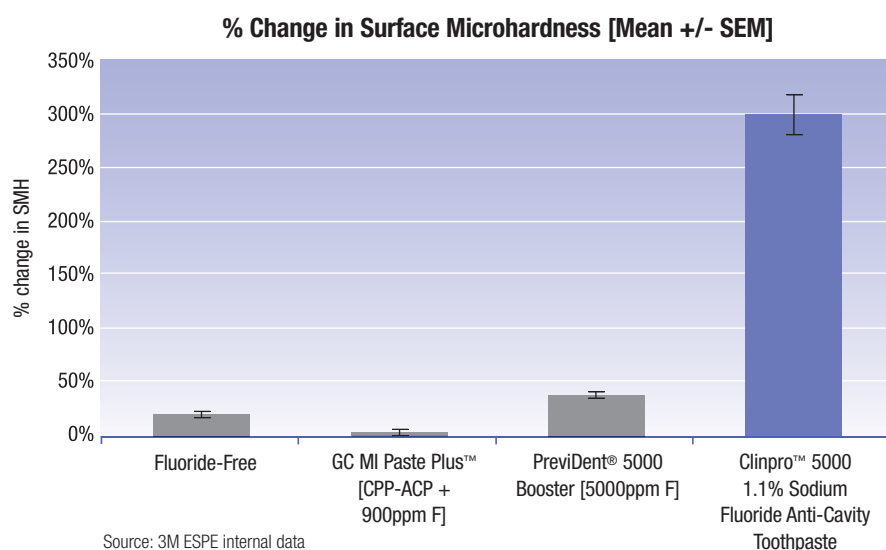
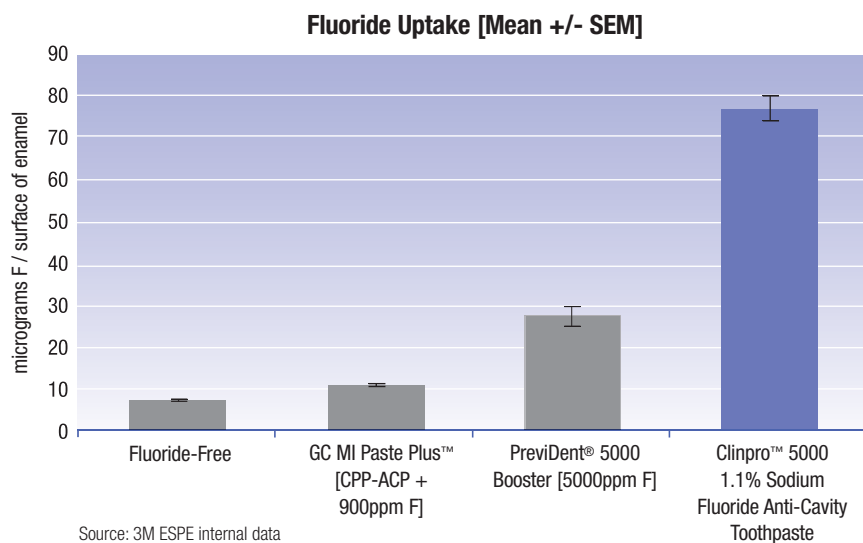
Each group of specimens was subjected to 20 days of pH cycling with each day consisting of a series of soaking in demineralizing solution, artificial saliva and toothpaste/fluoride preparation treatments (a slurry of one part fluoride preparation and three parts water). A 1:3 dilution of the toothpaste represents normal tooth brushing.

Following 20 days of pH cycling, the specimens were subjected to microdrill biopsy and surface microhardness analysis to determine fluoride uptake and remineralization ability, respectively.

Results

Clinpro 5000 toothpaste was significantly more effective than the other toothpastes/fluoride-containing preparations in this study on all measures tested.

- Clinpro 5000 toothpaste exhibited statistically significantly greater fluoride uptake into demineralized enamel than GC MI Paste Plus and PreviDent 5000 Booster.
- Clinpro 5000 toothpaste exhibited statistically significantly greater remineralization than GC MI Paste Plus and PreviDent 5000 Booster.



Extrinsic Stain Removal

The cleaning efficiency of toothpaste is determined using the Pellicle Cleaning Ratio (PCR) test. This *in vitro* test evaluates a toothpaste formulation's ability to remove stained pellicle compared to that of the American Dental Association (ADA) reference standard, calcium pyrophosphate. Higher PCR scores are reflective of better cleaning and whitening. In this experiment, over-the-counter toothpastes typically exhibit PCR scores between 65 and 115.²²

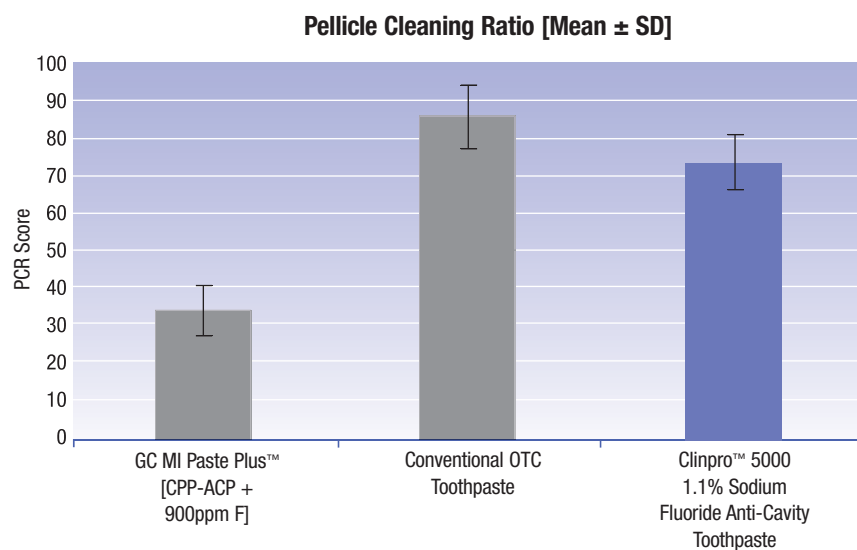
Methodology

Specimens of enamel were prepared from bovine teeth. The specimens were stained by alternatively submerging and air drying in a solution of soy broth, tea, coffee, mucin, and *Sarcina lutea* for a period of four days. Following staining, the color of each specimen was measured using a spectrophotometer.

Stained specimens were placed on a V-8 cross-brushing machine equipped with soft-bristled toothbrushes. One hundred and fifty grams of force was applied to the toothbrushes. Specimens were brushed with slurries (25 grams of fluoride-containing preparation and 40 grams of deionized water) for a total of 800 strokes. One slurry contained Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste while the others contained GC MI Paste Plus™ or a conventional 1100 ppm fluoride toothpaste. Following brushing, the color of each specimen was measured. The change in color observed for each slurry was compared to that observed for the ADA Reference Standard of calcium pyrophosphate to determine the PCR score.

Results

Clinpro 5000 toothpaste exhibited a PCR value of 73.9 which indicates effective stain removal. This value is statistically greater than the 33.8 PCR value achieved with GC MI Paste Plus. Clinpro 5000 toothpaste effectively cleans and whitens teeth.



Source: 3M ESPE internal data

Abrasivity

Toothpaste needs to strike a balance between effective cleaning and abrasivity. Toothpastes that are highly abrasive can damage enamel and dentin over time. ISO 11609 Dentistry -- Toothpastes -- Requirements, Test Methods and Marking contains an abrasivity requirement and provides appropriate test methods for determining abrasivity. Two tests, relative dentin abrasion (RDA) and relative enamel abrasion (REA), were performed to determine if the abrasive system used in this formulation is safe for twice daily, unsupervised tooth brushing.

Methodology

The RDA and REA tests are similar. Irradiated dentin or enamel was brushed with slurries (25 grams of fluoride-containing preparation with 40 grams of deionized water). One slurry contained Clinpro 5000 toothpaste while the others contained PreviDent® 5000 Booster (5000 ppm F-) or GC MI Paste Plus (900 ppm F-). Abrasivity was reported relative to a reference standard abrasive, calcium pyrophosphate. When evaluating dentin, the test formulation must not exceed 2.5 times that of the reference standard abrasive (that is assigned a value of 100) and when evaluating enamel, the test formulation must not exceed 4 times that of the reference standard abrasive (that is assigned a value of 10).

Because dentin is considered approximately 10 fold more susceptible to abrasion than enamel (the reason for the assignment of 100 and 10 for the reference standard), dentin abrasivity is often viewed as a more appropriate measure of abrasivity to ensure the preparation is not overly aggressive.

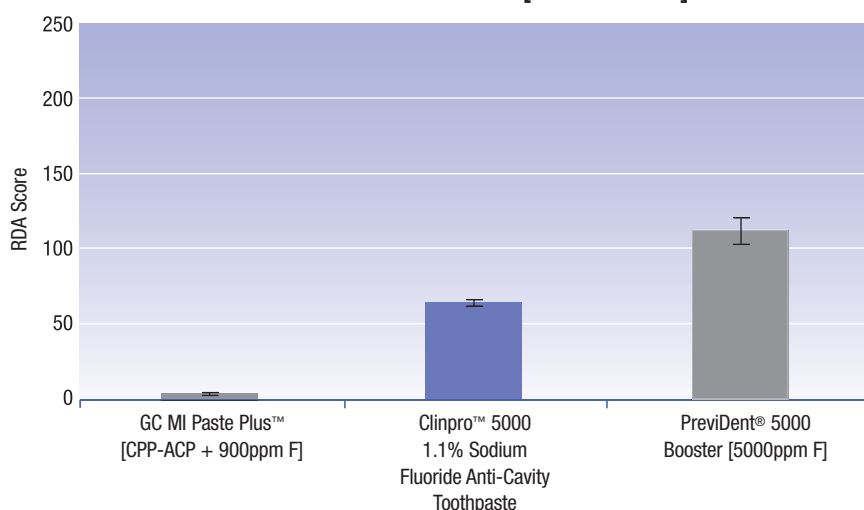
Results

The RDA value observed for Clinpro 5000 toothpaste was 62.15, well under the limit of 250. The RDA value for PreviDent 5000 Booster was 112.03, statistically higher than that for Clinpro 5000. This indicates that Clinpro 5000 toothpaste is less abrasive on dentin.

The REA value for Clinpro 5000 toothpaste was 3.49, well under the limit of 40. The REA value for the PreviDent 5000 Booster was 3.39, statistically the same as that for Clinpro 5000.

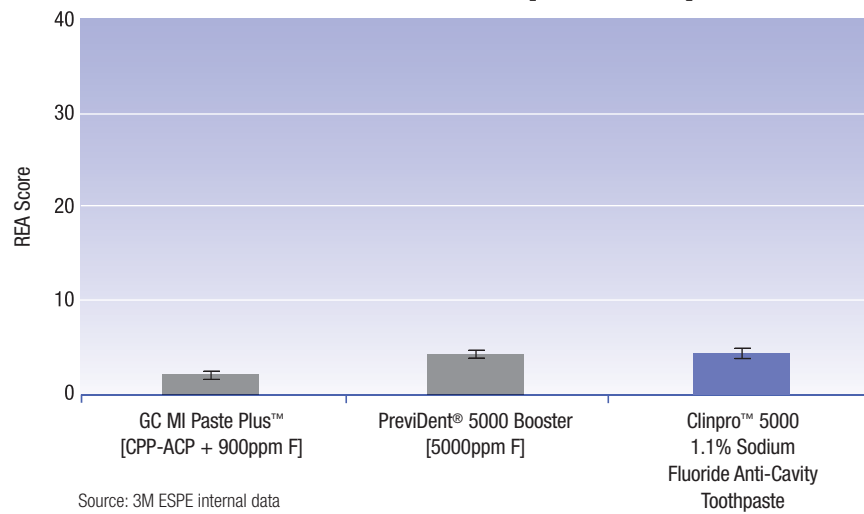
Clinpro 5000 toothpaste provides gentle, effective cleaning of enamel and dentin.

Relative Dentin Abrasion [Mean +/- SEM]



Source: 3M ESPE internal data

Relative Enamel Abrasion [Mean +/- SEM]



Source: 3M ESPE internal data

DIRECTIONS FOR USE

For full prescribing information and patient information, refer to package insert which is available at www.3MESPE.com/preventivecare.

STORAGE

Refer to packaging of Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste for storage information.

QUESTIONS AND ANSWERS**Are my patients at risk for tooth decay?**

While the prevalence of dental caries in permanent teeth of US adolescents aged 12-19 years old decreased from 1994 to 2004, the figure still remains above 50%. (68% in 1988-1994 to 59% in 1999-2004). The mean number of decayed and filled permanent teeth in this age group was 2.55 in 1999-2004.

The prevalence of coronal and root caries in the adult population (20-64 years old) has declined from 95% and 19%, respectively (1988-1994), to 92% and 14%, respectively (1999-2004). The number of decayed, missing, or filled permanent teeth has decreased in this group in the decade from 1994 to 2004.²³

Why do my patients need a prescription strength toothpaste?

Studies have shown that toothpastes with a higher concentration of fluoride deliver greater anticaries efficacy than those with lower concentrations. A similar dose response has been observed when studying the anticaries efficacy of fluoride-containing toothpaste in the control of root caries. These results support a correlation between the fluoride concentration in toothpaste and clinical anticaries efficacy.

What advantages does Clinpro 5000 toothpaste offer over non-prescription strength toothpastes?

Clinpro 5000 toothpaste contains more than 4 times the fluoride contained in non-prescription strength toothpastes. In laboratory studies, Clinpro 5000 toothpaste has provided greater fluoride uptake and remineralization than over-the-counter toothpastes available at retail stores. In addition, Clinpro 5000 toothpaste has been shown in laboratory studies to reverse white spot lesions greater than regular toothpaste.

What advantages does Clinpro 5000 toothpaste offer over other prescription-strength toothpaste?

Clinpro 5000 toothpaste contains an innovative tri-calcium phosphate ingredient, available exclusively from 3M ESPE. Clinpro 5000 toothpaste is more effective at reversing white spot lesions in laboratory studies when compared to other prescription toothpaste products. *In vitro* studies have shown that Clinpro 5000 toothpaste exhibits greater fluoride uptake and remineralization than select prescription-strength toothpaste yet is less abrasive than other prescription-strength toothpastes.

How long can my patients continue to use Clinpro 5000 toothpaste? Is there a time limit for treatment with Clinpro 5000 toothpaste?

With Clinpro 5000 toothpaste your patients can receive the benefit of 5000 ppm fluoride in a gentle toothpaste that is less abrasive to enamel and dentin. Your patients can use Clinpro 5000 toothpaste in place of their conventional toothpaste for the time necessary to control and prevent dental caries.

SUMMARY

Clinpro 5000 toothpaste:

- is used for the prevention of dental caries
- helps to prevent and reverse root caries
- is more effective than conventional toothpastes in preventing caries
- contains 5000 ppm fluoride ion, 4 times more fluoride than regular adult toothpaste
- contains an innovative tri-calcium phosphate ingredient
- cleans and whitens teeth
- exhibits greater fluoride uptake than GC MI Paste Plus™ and PreviDent® 5000 Booster
- provides greater remineralization than GC MI Paste Plus and PreviDent 5000 Booster
- helps reverse white spot lesions greater than GC MI Paste Plus and PreviDent 5000 Booster

WARRANTY

3M ESPE warrants this product will be free from defects in material and manufacture. 3M ESPE MAKES NO OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining the suitability of the product for user's application. If this product is defective within the warranty period, your exclusive remedy and 3M ESPE's sole obligation shall be repair or replacement of the 3M ESPE product.

LIMITATION OF LIABILITY

Except where prohibited by law, 3M ESPE will not be liable for any loss or damage arising from this product, whether direct, indirect, special, incidental or consequential, regardless of the theory asserted, including warranty, contract, negligence or strict liability.

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Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use 3M™ ESPE™ Clinpro™ 5000 Anti-Cavity Toothpaste safely and effectively. See full prescribing information for Clinpro 5000 Anti-Cavity Toothpaste.

3M™ ESPE™ Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste for oral use

-----**INDICATIONS AND USAGE**-----

Clinpro 5000 Anti-Cavity Toothpaste is indicated for use as part of a professional program for the prevention and control of dental caries. (1)

-----**DOSAGE AND ADMINISTRATION**-----

- Use once daily in place of conventional toothpaste unless instructed otherwise by a physician or dentist. (2)
- Apply a thin ribbon or pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste using a soft-bristled toothbrush and brush teeth for at least two minutes. (2)
- After brushing adults should expectorate. Children 6 to 16 years of age should expectorate and rinse mouth thoroughly with water. (2)

-----**DOSAGE FORMS AND STRENGTHS**-----

White toothpaste containing 1.1% sodium fluoride (3)

-----**CONTRAINDICATIONS**-----

Do not use in children under 6 years of age unless recommended by a dentist or physician. (4)

-----**WARNINGS AND PRECAUTIONS**-----

- Do not swallow. (5)
- Keep out of reach of children under 6 years of age. (5)
- Repeated ingestion of high levels of fluoride may cause dental fluorosis. (5)

-----**ADVERSE REACTIONS**-----

Allergic reactions and other idiosyncrasies have been rarely reported. (6)

To report SUSPECTED ADVERSE REACTIONS, contact 3M ESPE Dental Products Division at 1-800-634-2249 or www.3MESPE.com, or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch

Revised: 09/15/08

FULL PRESCRIBING INFORMATION: CONTENTS*

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* Sections or subsections omitted from the full prescribing information are not listed.

FULL PRESCRIBING INFORMATION

1 INDICATIONS AND USAGE

Clinpro 5000 Anti-Cavity Toothpaste is indicated for use as part of a professional program for the prevention and control of dental caries.

2 DOSAGE AND ADMINISTRATION

- Use once daily in place of conventional toothpaste unless instructed otherwise by a physician or dentist.
- Apply a thin ribbon or pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste using a soft-bristled toothbrush and brush teeth for at least two minutes.
- After brushing adults should expectorate. Children 6 to 16 years of age should expectorate and rinse mouth thoroughly with water.
- Follow these instructions or use as directed by a dental professional.

3 DOSAGE FORMS AND STRENGTHS

White toothpaste containing 1.1% sodium fluoride

4 CONTRAINDICATIONS

Do not use in children under 6 years of age unless recommended by a dentist or physician.

5 WARNINGS AND PRECAUTIONS

- **DO NOT SWALLOW.** If more than a pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste is swallowed, contact a medical or dental professional or a poison control center.
- Keep out of reach of children under 6 years of age.
- Repeated ingestion of high levels of fluoride may cause dental fluorosis. For this reason, use in children with developing dentition requires special supervision to prevent swallowing. Prescribing dentists and physicians should consider risk of fluorosis when prescribing for use in children less than 6 years of age.

6 ADVERSE REACTIONS

Allergic reactions and other idiosyncrasies have been rarely reported.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Fluoride crosses the placenta in women and has been measured in cord blood, amniotic fluid, and serum of newborn children, but without a consistent correlation to maternal serum fluoride levels.^{1,2} There are no data to indicate an increased susceptibility to fluorosis during pregnancy. Developmental studies were conducted by the National Toxicology Program, with sodium fluoride administered in the drinking water to pregnant rats and rabbits. No developmental toxicity was observed, even at doses that caused maternal toxicity. The No Adverse Effect Levels were about 29mg/kg-day and 27mg/kg-day for rabbits and rats, respectively.³ There is no conclusive evidence of fluoride developmental effects in humans.^{1,2}

The Institute of Medicine established a fluoride Upper Limit of 10 mg/day for pregnant women.²

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in pregnant women or women who may become pregnant.

8.3 Nursing Mothers

An extremely small proportion of fluoride in drinking water is transferred to breast milk. The Institute of Medicine established a fluoride Upper Limit of 10mg/day for nursing women.² Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in women who are nursing.

8.4 Pediatric Use

The primary adverse effects of fluoride are fluorosis of dental enamel and of the skeleton; these effects occur at exposures below those associated with other adverse health effects. The population most at risk for dental fluorosis is children during the period of tooth formation, i.e. from birth to 8 years of age. For this population, the Institute of Medicine (IOM) established Fluoride Upper Limits of intake based on the risk of dental fluorosis. In populations with permanent dentition, skeletal fluorosis is the greatest risk from excessive fluoride. For this population the Institute of Medicine established Fluoride Upper Limits based on the risk of skeletal fluorosis.²

Population IOM Fluoride Upper Limit

Infants 0-6 months old	0.7mg/day
Infants 7-12 months old	0.9mg/day
Children 1-3 years old	1.3mg/day
Children 4-8 years old	2.2mg/day
Children > 8 years old	10mg/day

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing product use in children.

8.5 Geriatric Use

No studies of Clinpro 5000 Anti-Cavity Toothpaste have been conducted to determine whether subjects aged 65 and over respond differently from younger subjects.

10 OVERDOSAGE

Ingestion of large amounts of fluoride may result in abdominal pain, stomach upset, nausea, vomiting, and diarrhea. These symptoms may occur at overdosages of 5mg/kg of body weight. Fluoride doses of 16mg/kg have been fatal.

Treatment Recommendations for Overdose of Clinpro 5000 Toothpaste⁴

Ingested fluoride dose	Amount for 10kg (22 pound) child*	Recommended action to take
Less than 5mg/kg	This equals less than ½ ounce (or 2 teaspoons).	Do not induce vomiting. Give 1-2 glasses of milk and observe for symptoms of stomach upset. If symptoms persist more than a few hours, seek medical attention or contact a poison control center.
5mg/kg or more	This equals about ½ ounce (about 2 teaspoons) or more.	Do not induce vomiting. Give 1-2 glasses of milk and seek medical attention or contact a poison control center.
15mg/kg	This equals 1 ounce or ¼ of the tube.	Seek immediate medical attention. Do not induce vomiting. Give 1-2 glasses of milk.

*The amount to reach the fluoride dose will be proportionately larger with older children and adults.

A thin ribbon or pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste weighs approximately 0.3g and contains approximately 1.5mg of fluoride ion. A 4oz tube contains 564mg of fluoride ion.

11 DESCRIPTION

Clinpro 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste is a self-applied fluoride dentifrice for the prevention of dental caries. Each gram contains 5mg of fluoride ion in a neutral pH base, consisting of water, sorbitol, hydrated silica, glycerin, polyethylene-polypropylene glycol, flavor, polyethylene glycol, sodium lauryl sulfate, titanium dioxide, carboxymethyl cellulose, sodium saccharin and tri-calcium phosphate.

12 CLINICAL PHARMACOLOGY

Clinpro 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste aids in the prevention of tooth decay. Fluoride delivered from Clinpro 5000 inhibits the demineralization of sound teeth and enhances the remineralization (i.e., repair) of demineralized teeth. During tooth brushing, fluoride is taken up by teeth and dental plaque. Fluoride is taken up with calcium and phosphate by demineralized teeth resulting in an improved tooth structure that contains more fluoride and less carbonate than naturally occurring tooth structure and is more resistant to acid challenge. Additionally, calcium fluoride is formed on the crystal structure of teeth. As the pH of the mouth drops, fluoride is released from calcium fluoride and aids in the remineralization of teeth. Fluoride taken up into plaque alters the activity of cariogenic bacteria. Fluoride inhibits the process by which cariogenic bacteria metabolize carbohydrates resulting in less acid and adhesive polysaccharide production by the bacteria.

15 REFERENCES

1. National Research Council. Fluoride in drinking water: A scientific review of EPA's standards; National Academies Press 2006.
2. IOM. Dietary Reference Intakes: The essential guide to nutrient requirements. National Academies Press 2006.
3. Heindel JJ, et al. Developmental toxicity evaluation of sodium fluoride administered to rats and rabbits in drinking water. Fundam Appl Toxicol 1996;30(2):162-177.
4. Poisindex. Toxicologic Management – Fluoride. Thomson Micromedex.

16 HOW SUPPLIED/STORAGE AND HANDLING

Clinpro 5000 Anti-Cavity Toothpaste is supplied as a white dentifrice paste in a 4oz (113g) plastic tube (NDC 48878-3120-4).

Storage

This product is designed to be stored and used at room temperature. Shelf life at room temperature is 24 months. Ambient temperatures routinely higher than 27C/80F, or lower than 10C/50F may reduce shelf life. See outer package for expiration date.

Manufactured for:

3M ESPE

Dental Products
St. Paul, MN 55144
Revision date: 9/15/08

Rx Only

44-0007-4699-8

3M ESPE

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