



EFFECTIVENESS OF DEN SHIELD PRODUCT IN COMBATING DENTINE HYPERSENSITIVITY.

Authors:

Elizabeth Jodkowska ¹, Joanna Plitowska².

Department of Dental Hygiene Stomatology Institute Medical Academy in Warsaw

Director of Stomatology Department IS MA in Warsaw:

Professor Dr. Elizabeth Jodkowska

1. Director of the Department of Stomatology IS AM in Warsaw
2. Doctor of Stomatology Dr. Joanna Politowska, Post-graduate internship at the Baby Jesus Hospital in Warsaw.

Subject: Effectiveness of Den Shield product in combating dentine hypersensitivity.

Key Words: Dentine hypersensitivity, clinical evaluation, Den Shield product.

Summary: The aim of the study was to determine the effectiveness of Den Shield product in treatment of dentine hypersensitivity. The study involved 25 patients. The product was shown to be highly effective.

Introduction:

Dentine hypersensitivity is characterized by short, sharp pain caused by external factors, usually thermal, chemical and/or osmotic. The pain often forms through irritation of nerve fibers present next to odontoblast cells through rapid fluid movement in the dentine canals due to the above-mentioned stimuli. The cause of teeth hypersensitivity can be the loss of gum tissue, which is related to the exposure of the tooth cervix, the erosion of origin cavities, a mechanical defect of hard tissue of the tooth, for example, by scaling or after treatment, damaging the surface of the tooth with elements of a bridge or an orthodontic appliance (braces). Many articles have been issued regarding the pathological state, the cause and the method of treatment of this unpleasant condition of the patient. Treatment of hypersensitivity can be conducted in a stomatology clinic using various remedies such as: polish, foam or laser therapy. A home treatment with chemical products may also be proposed to the patient. There exists above all, a treatment with combines the two above-mentioned therapies, the series of products Den Shield evaluated in this research.

Goal: The goal of this research was to evaluate the effectiveness of the treatment of tooth hypersensitivity.

Materials and Procedure:

The materials for the treatment of tooth hypersensitivity are as follows: Shield Starter utilized in a stomatology clinic and toothpaste Shield Builder and Shield Saver. An active ingredient of Den Shield is NovaMin. NovaMin is a nonstructural bioactive glass, highly active in contact with water. It is composed of natural elements found in the mineral structure of bone tissue: calcium, phosphorus, sodium, and silicon. This same material, only in a different physical state, is used in surgical procedures regenerating bone for over twenty years.

A chunk of NovaMin releases sodium after contact with saliva, the calcium and phosphorus from the soluble sodium net. The released sodium ions raise the pH level in the mouth, increasing the amount of yield of calcium and phosphorus. These ions close the canaliculi and create a protective layer for the sensitive surface of the tooth.

The Shield Starter set is composed of one container of .5g of the substance NovaMin, a disposable pipette and applicator. The powder is mixed with a little water until a mono-structured paste is formed. With the help of the applicator, the paste is applied to the surface of the tooth. It is left there for two minutes and is rinsed out gently. The patient will feel an instant relief immediately after using the Den Shields product. As a favor in the clinic after treatment, the patient receives two tubes of Shield Builder and Shield Saver paste for home.



For the first two weeks, the patient is advised to brush twice a day with Shield Builder just as if using everyday toothpaste. After brushing it is not required to rinse the mouth and it is advised not to eat or drink for thirty minutes after brushing. The first two weeks is a time in which the mineral layer of the tooth is rebuilt closing the exposed canals. Next, the patient is advised to brush their teeth with the Shield Saver paste once a week. This will help retain the achieved therapeutic effect. DenShield therapy lasts six months. The study was done at the Medical Academy in Warsaw. There were 25 patients aged 18-60 years old complaining about sensitivity to thermal, mechanical and chemical stimulus. 20% of the patients were 18-25, 28% - 25-30, and 52% were over 40. Patients graded their pain during four consecutive visits: after scaling on the same day, after first, second and fourth week. During first visit the pain was examined just after scaling and after DenShield in-office was applied. Patients graded the pain caused by cold air and mechanical stimulus.

A 4-step sensitivity scale was used as follows:

0. No pain
1. Weak pain
2. Strong pain
3. Very strong pain

Before the study patients filled out a form about their hygienic habits – the way they brush their teeth, the kind of toothpaste they use, how long they suffer from tooth sensitivity, etc. (the results are in the table no 1).

Results:

Sensitivity in most patients was caused by: cold (96%), sour (64%), hot (64%) and sweet (36%). The degree of pain due to a mechanical stimulus is shown on graph no 3.

The percentage of patients suffering from very strong pain – 36% and 64% suffering from strong pain caused by a mechanical stimulus. Immediately after DenShield in-office was applied 100% of the patients felt relief, 52% didn't feel any pain and 48% felt slight pain. On the 4th visit: 76% of the patients didn't feel a thing and 24% still felt slight pain (on the scale from 1-4 described as 1). After 4 weeks the difference was significant!

There was a very similar situation with the thermal stimulus. 100% felt relief after the first application – 64% patients didn't feel any pain and 36% felt very weak pain. On the 4th visit 80% didn't feel any pain and 20% felt very slight pain. The statistical difference was significant!

After 1 month of therapy, 56% of the patients declared that DenShield is a good product, 32% said that it's very good and 12% that it's pretty good. There were no patients to say that DenShield doesn't work! (See Figure no 5.) The results of the analysis suggest that the effect of the treatment did not depend on the duration of tooth hypersensitivity, the type of toothbrush used, the amount of main meals or cavity causing food eaten in a given day, the presence of eroding cavity origins or the recession of the marginal gingival.

Discussion:

Most products for teeth sensitivity have to be used several times. Unfortunately, few or even up to twenty weeks of break is needed between applications. One application of products such as: Duraphat, Fluor Protector and Bifluorid 12 are effective for 34-68% patients. One application of DenShield in-office gave a relief for 52% of the patients. After some time of using DenShield toothpaste the results were much better: 76-80%. Similar results were shown while examining Green or Seal & Protect, but another application of DenShield in-office wasn't necessary. The therapy with DenShield toothpaste was efficient for over 6 months.

It is important to mention that the study proved efficacy of DenShield regarding sensitivity caused by many different factors. The effect didn't really give complete relief for all patients, but reduced sensitivity a lot. DenShield was efficient after 1 month for 80% of the patients.

DenShield is a good product and is worthy of recommendation for teeth sensitivity therapy – in the chair and at home.



Sources:

- Urbaniak B., i wsp.: Charakterystyka pacjentów z nadwrażliwością zębiny. *Mag. Stom.*, 2001, 9, 36-40.
- Dwornicka K.: Nadwrażliwość zębiny. *Twój Przegl. Stom.*, 2000, 2, 22-23.
- Bagińska J., i wsp.: Zastosowanie lakieru Seal & Protect w znoszeniu nadwrażliwości zębiny. *Mag. Stoma.* 2002,7-8, 32-35.
- Betleja K., i wsp.: Preparat Green Or w zwalczaniu nadwrażliwości zębiny. *Mag. Stom.*, 2002,6, 32-34.
- Trąbalska-Świstalka M., i wsp.: Skuteczność preparatu Green Or w zwalczaniu nadwrażliwości zębiny. *Mag. Stom.* 2003,5, 38-42.
- Wiercicka M. I wsp.: Pianka fluorowa Floam w zwalczaniu nadwrażliwości zębów w przebiegu chorób przyzębia. *Mag. Stom.* 2001,9,70-71.
- Dentine hypersensitivity: a randomized, double-blind, placebo controlled study of the efficacy of a fluoride-sensitive teeth mouthrinse. *J Clin Periodontal* 2004, 30, 885-889.
- Pamir T. et al.: The efficacy of three desensitizing agents in treatment of dentine hypersensitivity. *J. Clin. Pharmacy and Therapeutics* 2005, 30, 73-76.
- Artelt H.M.: Leczenie nadwrażliwości szyjek zębowych związkami uwalniającymi fluor. *Stom. Współcz.* 1995, 2, 6,535-538.
- Jodkowaska E.: Ocena skuteczności lakierów fluorowych w znoszeniu nadwrażliwości szyjek zębowych. *Stom. Współcz.*, 1995, 2, 5, 454-457.
- Pellelowska-Pionek M., i wsp.: Ocena kliniczna skuteczności lakieru fluorowego Bifluorid 12 w leczeniu nadwrażliwości szyjek zębów. *Czas. Stom.*, 1998, LI, 1, 9-12.
- Jodkowska E. i wsp.: Ocena skuteczności preparatu Seal & Protect w leczeniu nadwrażliwości zębiny. *Stom. Współcz.*, 2001, 8, 5.
- Jodkowska E.: Znoszenie nadwrażliwości szyjek zębowych lakierem fluorowym Duraphat i cementem szkłojononowym Vitrebond. *Stom. Współcz.*, 1993, 3, 188-193.
- Radwan-Oczko M., Ziętek M.: Ocena skuteczności preparatu Seal & Protect w leczeniu nadwrażliwości szyjek zębów. *Czas. Stom.*, 2001, LIV, 5, 313-318.



Table no.1: The following table presents numerical results from a questionnaire given to the studied group.

Questions		Number of patients	
Gender	Female	17	
	Male	8	
How long patients suffered from sensitivity	Few	Days	0
		Weeks	2
		Months	9
		Years	14
The type of stimulus causing pain	Provoked	24	
	without any reason	1	
Pain is felt during eating food that's:	Cold	24/25	
	Hot	16/25	
	Sour	16/25	
	Sweet	9/25	
Hygienic habits – brushing frequency	Time to time	0	
	Once a day	3	
	Twice or more	22	
The type of used toothbrush	Soft	8	
	Medium	13	
	Hard	0	
	Electric	4	
Brushing method	Scrubbing	6	
	Fonesa (round)	20	
	Roll (wymiatania)	11	
The type of toothpaste	common/regular	8	
	for sensitive teeth	17	
Eating habits	The number of main dishes a day	3	17
		4	8
	Number of dishes highly causing carries – sweets, etc.	Time to time	13
		Once a day	7
		Twice or more	5
Smoking	Yes	5	
	No	20	
Wearing dentures	Yes	0	
	No	25	
Previous teeth sensitivity treatment	Yes	10	
	No	15	



Figure no. 1

Product Den Shield– Shield Starter.



Figure no. 2

Product Den Shield– Toothpastes Shield Builder and Shield Saver





Figure no. 3

The degree of pain from a mechanical stimulus before and after 1 month of therapy with DenShield.

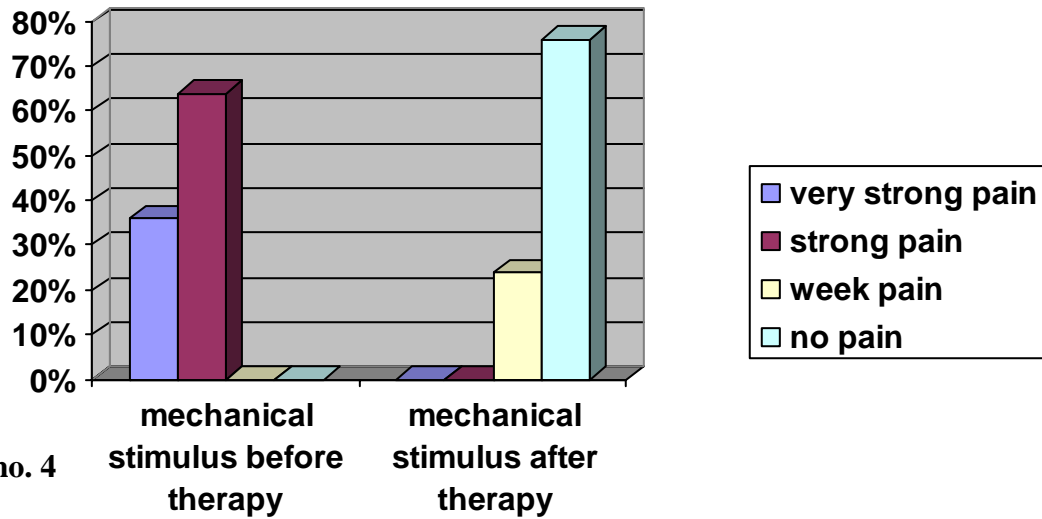


Figure no. 4

The degree of pain to a thermal stimulus before and after 1 month of therapy with DenShield.

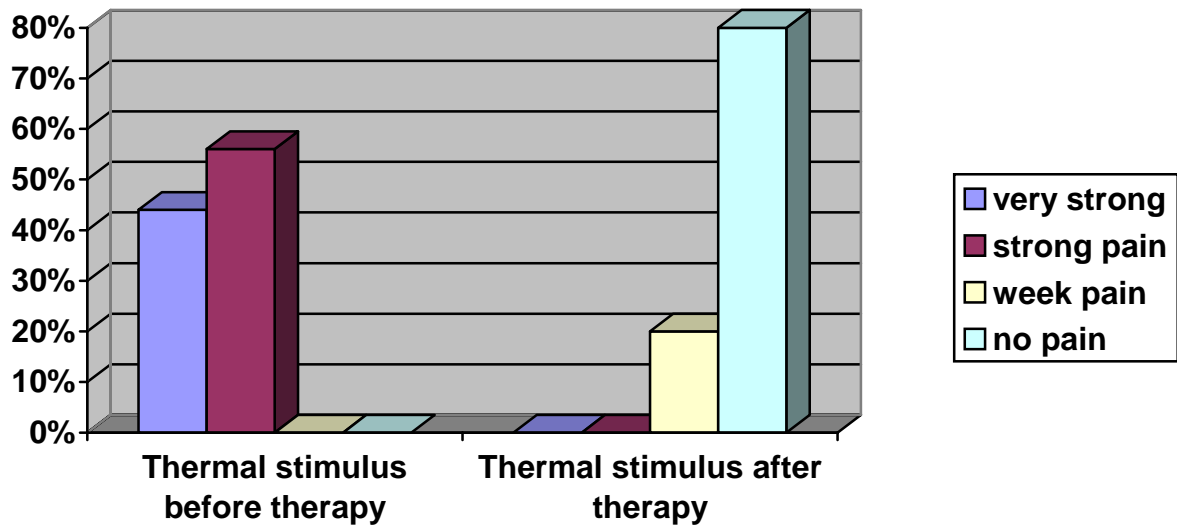




Figure no. 5

Efficacy of DenShield therapy in patients' opinion.

