CLINICAL STUDY INVESTIGATING THE EFFICACY OF A DESENSITIZING DENTIFRICE

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INTRODUCTION

Dentin Hypersensitivity (DH) is a frequently reported painful oral condition that affects the oral comfort and function amongst patients interfering with their quality of life. More often patients accept the discomfort caused by this complaint and commonly fail to inform and seek help. For that reason DH is also one of the least predictably and successfully treated chronic problem in dentistry.

OBJECTIVE: To evaluate the short-term effectiveness of a dentifrice with 7,5% nano-hydroxyapatite compared to a fluoridated toothpaste on DH reduction.

METHODOLOGY

This study consisted on a 4-week double blind, two treatment, parallelgroup, randomised clinical trial in 30 healthy adult patients with self-reported and clinically diagnosed DH. Two groups were enrolled to participate in a treatment plan with (A) *"Fluidinova© NanoXIM•CarePaste"* Nano-Hydroxyapatite based dentifrice and (B) "*Placebo*" standard fluoridated toothpaste. Two outcome measures – *Air-Blast* and *Thermal* evaluations – assessed by a VAS were used at enrolment, baseline visit and at the subsequent evaluations conducted after 2 and 4 weeks of product used. Data collected at all evaluations was then compared using the Wilcoxon test and further analysis was performed with the U Mann-Whitney test and the Bonferroni correction.

RESULTS & DISCUSSION

In total 184 teeth were screened and 59,8% corresponded of incisors, 14,2% canines, 19% premolars and 7% molars. Overall, it is observed a reduction in DH scores from baseline to the subsequent follow-up for both study groups (*Fig. 1).* According to the results within groups (*Fig. 2 and 3*), participants from group B exhibited significant improvement for both stimuli scores in all evaluations where for group A individuals there was a plateau from week 2 to week 4 of product use. It is observed that both groups were evenly balanced with no statistically significant differences at baseline for the thermal values obtained, however it is noticed a statistically significant difference with respect to the air-blast assessment. The following evaluations resulted in no statistically significant differences (*Fig. 4*).

Despite the reported positive results over the 4-week interval, more studies are required to help to determine the effect in the long term, not disregarding the variables that might affect the outcome.

Treatment Group (n)		Baseline *Air-Blast*	Baseline *Thermal*	2 weeks *Air-Blast*	2 weeks *Thermal*	4 weeks *Air-Blast*	4 weeks *Thermal*
Group A (n=76)							
Median		5.00	6.00	3.00	5.00	3.00	4.00
Percentiles	25	3.00	4.00	1.00	4.00	2.00	3.00
	50	5.00	6.00	3.00	5.00	3.00	4.00
	75	7.00	8.00	4.00	8.00	4.00	7.00
Group B (n=108)							
Median		3.00	6.00	4.00	6.00	2.00	4.50
Percentiles	25	2.00	5.00	2.00	3.00	1.00	2.00
	50	3.00	6.00	4.00	6.00	2.00	4.50
	75	7.00	8.00	6.00	8.00	4.00	7.00

Figure 1 – Within-group comparison of dentine hypersensitivity scores to the two stimuli tests at the three different intervals measured

Evaluations			
Air-Blast			
	Z	Asymp. Sig (1-tailed)	*p*-value*
Baseline vs. 2 weeks	-5,968	0,00025	0,00075
Baseline vs. 4 weeks	-6,105	0,00025	0,00075
2 weeks vs. 4 weeks	-0,949	0,1715	0,5145
Thermal			
	Z	Asymp. Sig (1-tailed)	*p*-value*
Baseline vs. 2 weeks	-1,255	0,1045	0,3135
Baseline vs. 4 weeks	-4,033	0,00025	0,00075
2 weeks vs. 4 weeks	-3,538	0,00025	0,00075

* Bonferroni adjustment based upon the three comparisons

Figure 2 – Within group changes – Group A

Air-Blast			
	Z	Asymp. Sig (2-tailed)	
Baseline	-2,545	0,011	
	Z	Asymp. Sig (1-tailed)	*p*-value*
2 weeks	-1,772	0,038	0,114
4 weeks	-1.906	0,0285	0,0855
Thermal			
	Z	Asymp. Sig (2-tailed)	
Baseline	-0,099	0,921	
	Z	Asymp. Sig (1-tailed)	*p*-value*
2 weeks	-0.996	0,1595	0,4785
4 weeks	-0,755	0,3775	1,1325

* *Bonferroni* adjustment based upon the three comparisons

Figure 4 – Inter-group comparisons for air-blast and thermal scores

Evaluations			
Air-Blast			
	Z	Asymp. Sig (1-tailed)	*p*-value*
Baseline vs. 2 weeks	-2,646	0,004	0,012
Baseline vs. 4 weeks	-6,417	0,00025	0,00075
2 weeks vs. 4 weeks	-5,787	0,00025	0,00075
Thermal			
	Z	Asymp. Sig (1-tailed)	*p*-value*
Baseline vs. 2 weeks	-3,253	0,0005	0,0015
Baseline vs. 4 weeks	-5,723	0,00025	0,00075
2 weeks vs. 4 weeks	5,089	0,00025	0,00075

* *Bonferroni* adjustment based upon the three comparisons

Figure 3 – Within group changes – Group B

CONCLUSION

Both investigated treatments have promising desensitizing potential. When compared among them, all proven to be equally effective and clinical significant superiority of one toothpaste over the other was not proven. Therefore, it is reasonable to conclude that both dentifrices are clinically comparable and efficient for the management and reduction of DH.