

EFFECT OF TOOTHPASTE CONTAINING NOVAMIN ON STREPTOCOCCOUS MUTANS COUNT IN DENTAL PLAQUE OF HIGH CARIES RISK CHILDREN (RANDOMIZED CONTROLLED CLINICAL TRIAL)

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INTRODUCTION

Inhibition of streptococcus mutans (*S.mutans*) can be effective in preventing caries in high caries risk children. Therefore, new materials such as Novamin, with antibacterial properties and remineralizing effects, have been introduced to promote remineralization and decrease the incidence of dental caries in children (1).

METHODOLOGY

Thirty-four high caries risk children, aged 3 to 6 years, were randomly divided into two groups.

Group I (test group):

Children used Novamin-containing toothpaste.

Group II (control group):

Children used Fluoride-containing toothpaste.

They were asked to brush their teeth twice daily using a soft brush and pea-sized amount of the toothpaste for 2-3 minutes for a whole month under their parent's supervision (2). Plaque samples were collected at baseline and at intervals of 1, 2, and 4 weeks, and cultured on Mitis Salivarius Agar (3). The percent change in *S.mutans* counts was calculated for each group.

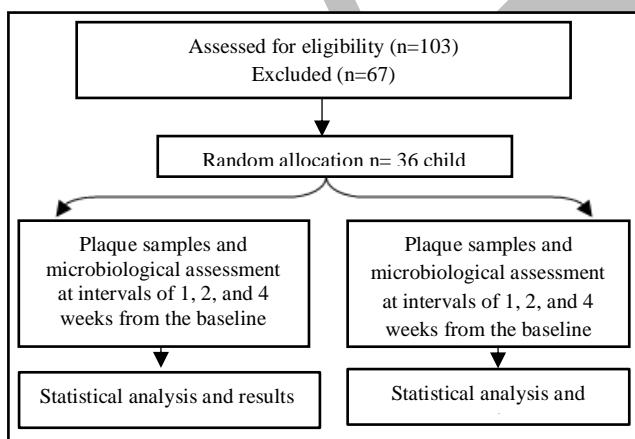


Figure (1): Flowchart of participants.

RESULTS AND DISCUSSION

Table (1) Shows the reduction in *S.mutans* counts in the two study groups when compared to baseline, with the most significant reduction recorded after four weeks of using the toothpaste ($P < 0.0001$), with statistically significant differences between the two groups. When the two groups were compared using the Mann-Whitney U test, the test group exhibited a higher percent reduction in *S.mutans* levels than the control group (50.71% and 36.18%, respectively).

Table (1): Comparison of *S.mutans* levels for all teeth among the study groups at baseline, 1 week, 2 weeks, and 4 weeks after

		Group I (n=18)	Group II (n=18)	P value
Baseline	count	4.18 x 10 ⁶	1.45 x 10 ⁶	0.023*
	Log ₁₀	6.57	6.11	
1 st week	count	2.73 x 10 ⁵	1.95 x 10 ⁵	0.429
	Log ₁₀	5.40	5.27	
2 nd week	count	1.28 x 10 ⁴	6.23 x 10 ⁴	0.002*
	Log ₁₀	4.10	4.59	
4 th week	count	1.80 x 10 ³	9.85 x 10 ³	<0.0001*
	Log ₁₀	3.02	3.98	
P value		<0.0001*	<0.0001*	

Figure (2) and figure (3) show *S.mutans* colonies on MSA media, before and after four weeks period of using the toothpaste in both test (A) and control (B) groups.

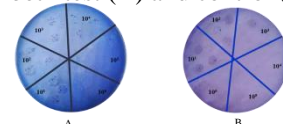


Figure (2): *S. mutans* colonies on MSA media, before using the toothpaste (at the baseline), (A): test group, (B): control group.

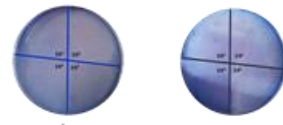


Figure (3): *S. mutans* colonies on MSA media, after 4 weeks period of using the toothpaste, (A): test group, (B): control group

The antibacterial effect of Novamin is attributed to the increased pH in the oral environment due to the release of alkaline ions and the constant release of sodium ions that increases the osmotic pressure and positive pressure on the bacterial cell membrane. Additionally, it increases salts in the surrounding environment, allowing water to flow out and leading to bacterial cell shrinkage and membrane damage.

CONCLUSION

Novamin-containing toothpaste showed to be an effective antimicrobial agent, with better effect than fluoride-containing toothpaste in *S.mutans* count reduction.

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