



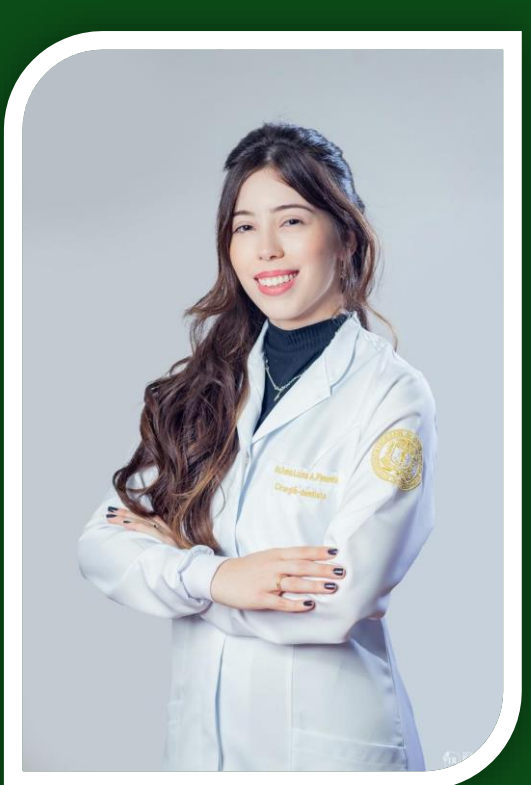
CLINICAL EFFECT OF A CANNABIDIOL-BASED MOUTHWASH ON DENTAL ENAMEL.

*Pimenta, A.L.A¹; Sousa, L.A²; Martins, C.H.G²; Panzeri, F.C¹.

1-Faculty of Dentistry of Ribeirão Preto, University of São Paulo, Ribeirão Preto, SP

2-Faculty of Biomedicine of Uberlândia, Federal University of Uberlândia, MG

The authors declare that there is no conflict of interest of any kind.



E-mail: anna.pimenta@usp.br

INTRODUCTION

Dental caries is associated with dental **biofilm accumulation** and its control is essential, with **chlorhexidine** as the gold standard; however, **Cannabidiol**, a natural compound derived from *Cannabis sativa*, has demonstrated promising **antibiofilm activity**.

OBJECTIVE

Evaluate the **in situ antibiofilm efficacy** of experimental **moutrinses** containing **cannabidiol** (CBD) and their effects on the **physical** and **mechanical** properties of dental enamel.

MATERIAL AND METHODS

This study was conducted **in situ**, with a **double-blind, crossover design**, consisting of **five** experimental phases, each lasting 7 days, with **7-day washout** intervals between phases to eliminate possible residual effects from previous treatments.

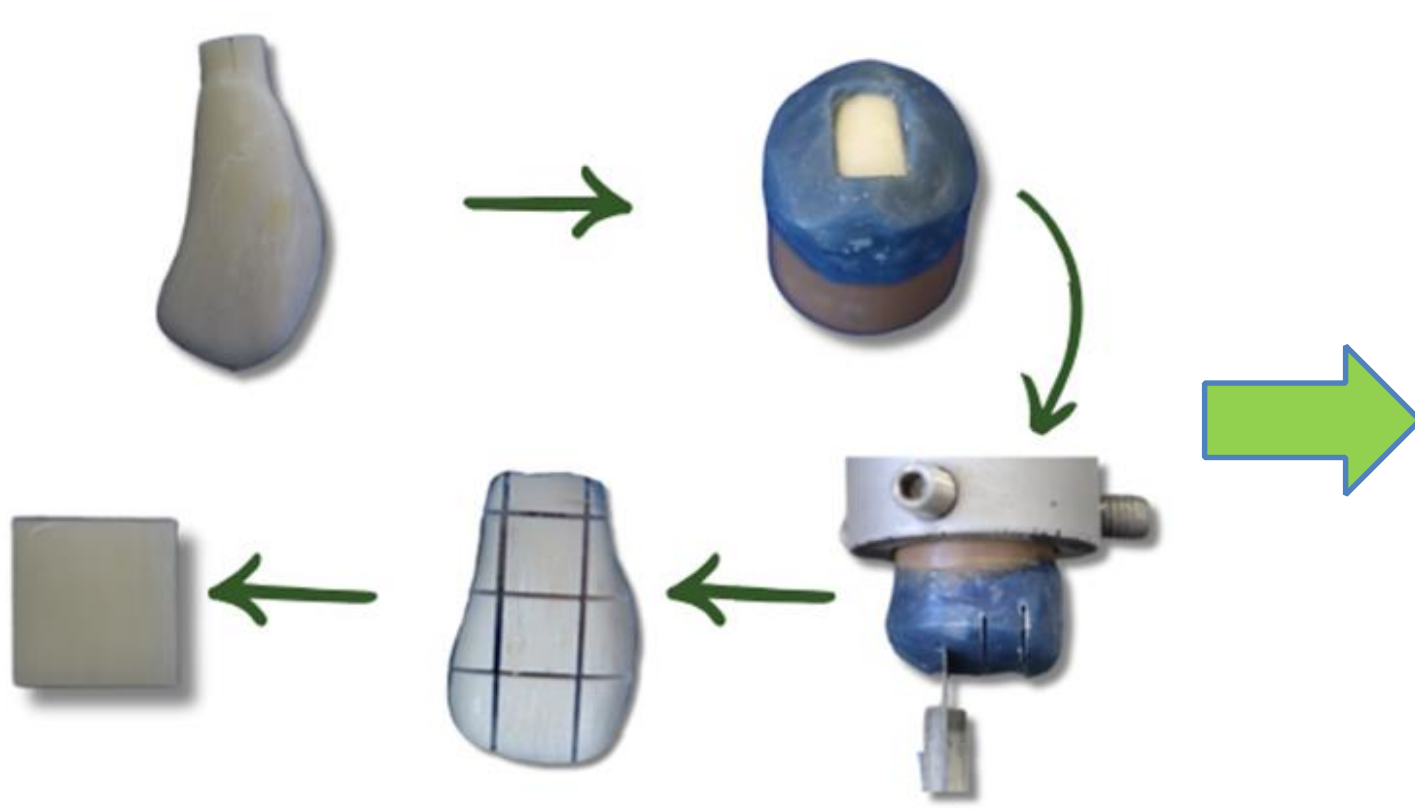


Figure 1: Obtaining samples using a metallographic cutter

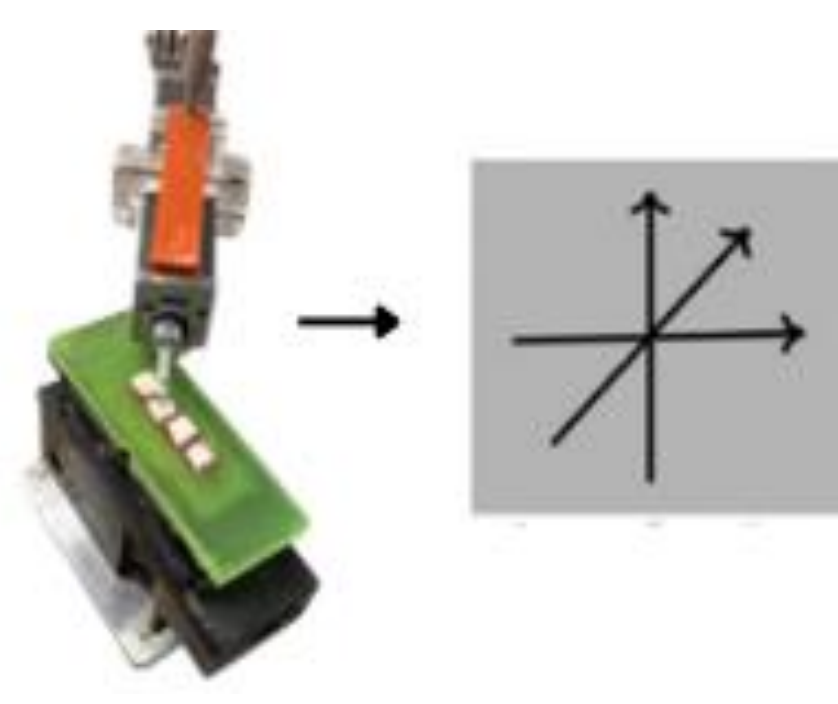


Figure 2: Initial standardization of surface roughness

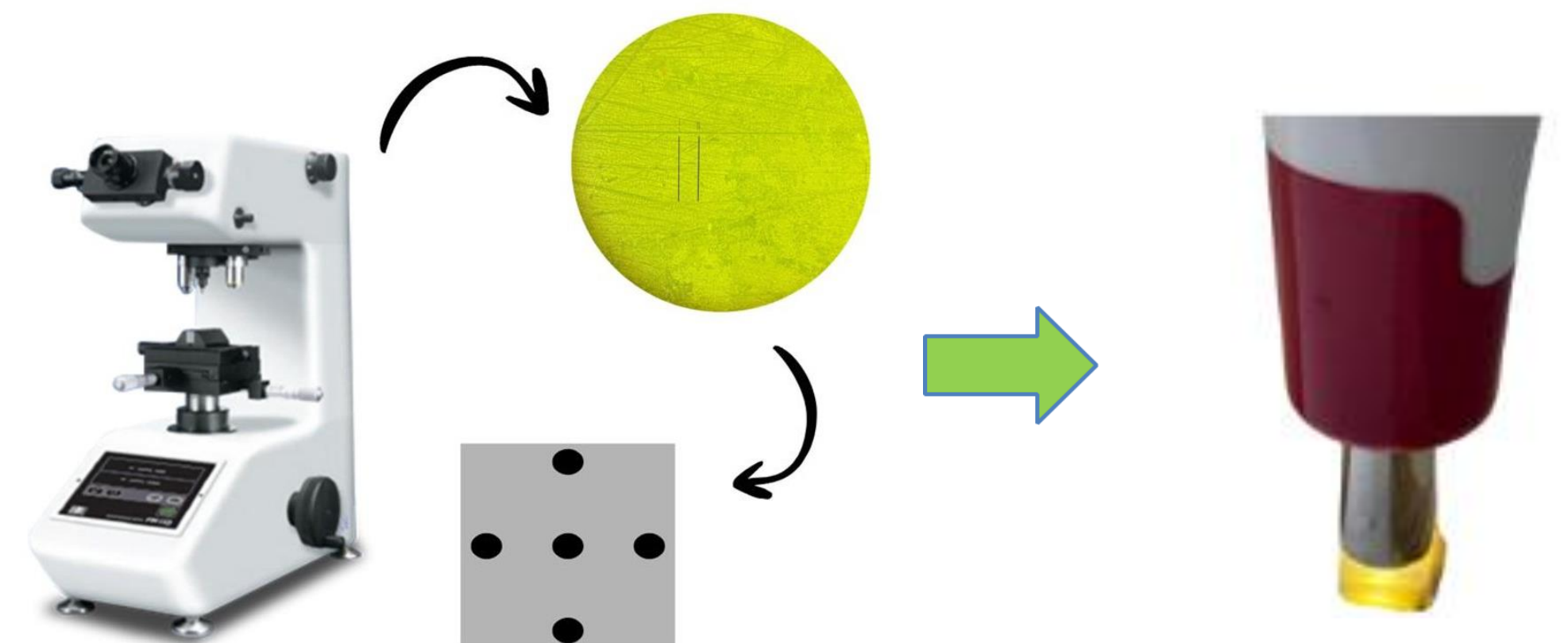


Figure 3: Initial reading with Microhardness meter (HMV-2, Shimadzu, Tokyo, Japan).

Figure 4: Initial reading with EasyShade (VITA Zahnfabrik, Bad Säckingen, Germany)

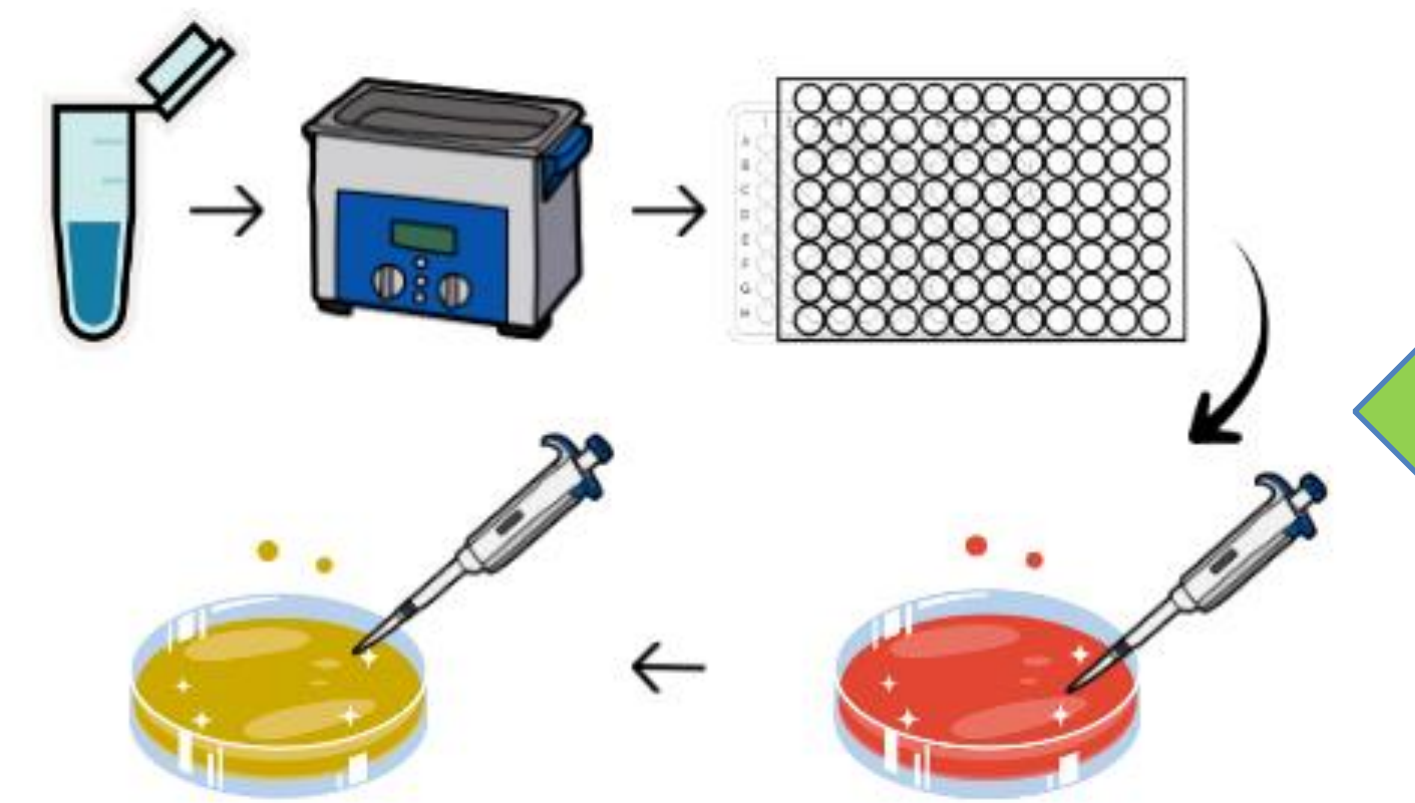


Figure 8: Fragments were sonicated, and 20 µL were transferred to 180 µL of BHI broth in 96-well plates for serial dilutions (10⁻¹–10⁻⁷). Aliquots were plated on 8-section Columbia agar for bacteria (red) and CHROMagar™ Candida (Difco) for yeast (yellow)



Figure 7: Participants dripped 20% sucrose solution onto only one side of the device 8 times a day. And they used the mouthwash 3 times a day.

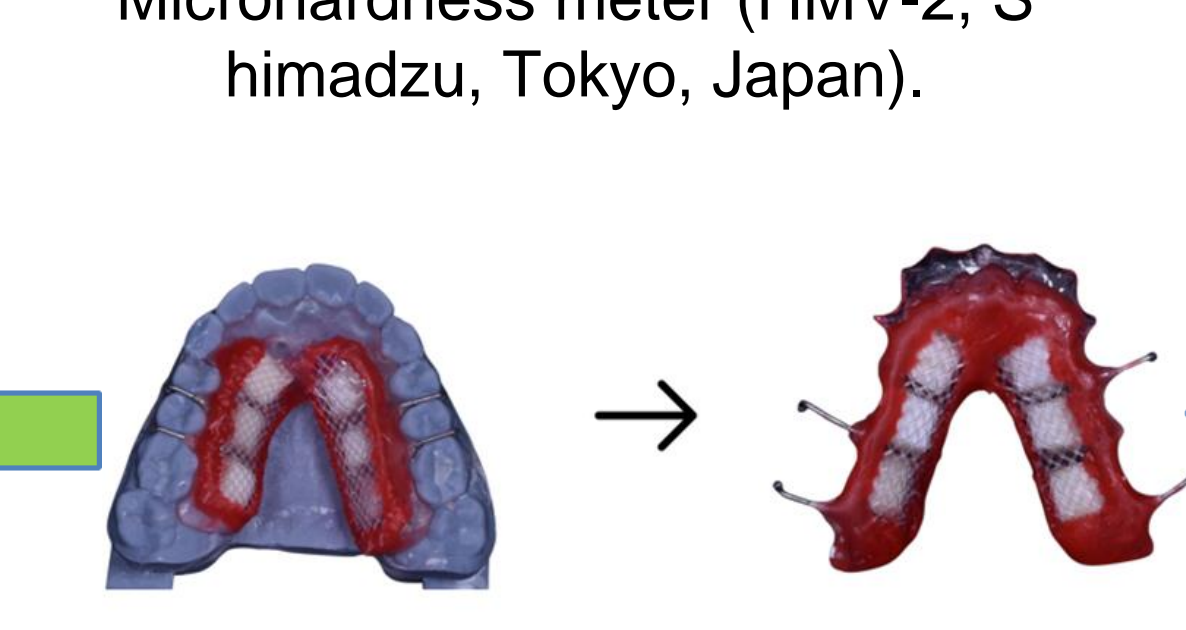


Figure 6: Palatal device ready for participant use



Figure 5: 3D printed model and palatal devices made of acrylic

RESULTS

Table 1 – Surface roughness results 2-way ANOVA (Bonferroni p<0.05).

	Placebo	CBD 0,01%	CBD 0,05%	CBD 0,1%	CHX
With sucrose	0,15 (0,12) abA*	0,13 (0,10) abA*	0,15 (0,06) abA*	0,22 (0,22) aA*	0,09 (0,05) bA*
sucrose-free	0,15 (0,08) aA*	0,16 (0,10) aA*	0,13 (0,06) aA*	0,13 (0,08) aA*	0,12 (0,04) aA*

Table 2 – Relative Microhardness Results (%) – 2-way ANOVA (Bonferroni, p<0.05).

	Placebo	CBD 0,01%	CBD 0,05%	CBD 0,1%	CHX
With sucrose	-46,04 (9,82) aA*	-36,6 (10,40) aA*	-37,96 (10,83) aA*	-36,85 (8,97) aA*	-42,38 (11,00) aA*
sucrose-free	-28,24 (20,55) aB*	-21,00 (5,76) aB*	-27,43 (11,78) aA*	-33,25 (13,4) aA*	-33,205 (13,00) aA*

Table 3 – Biofilm – Kruskal-Wallis (Dunn, p<0.05) – Median (minimum and maximum)

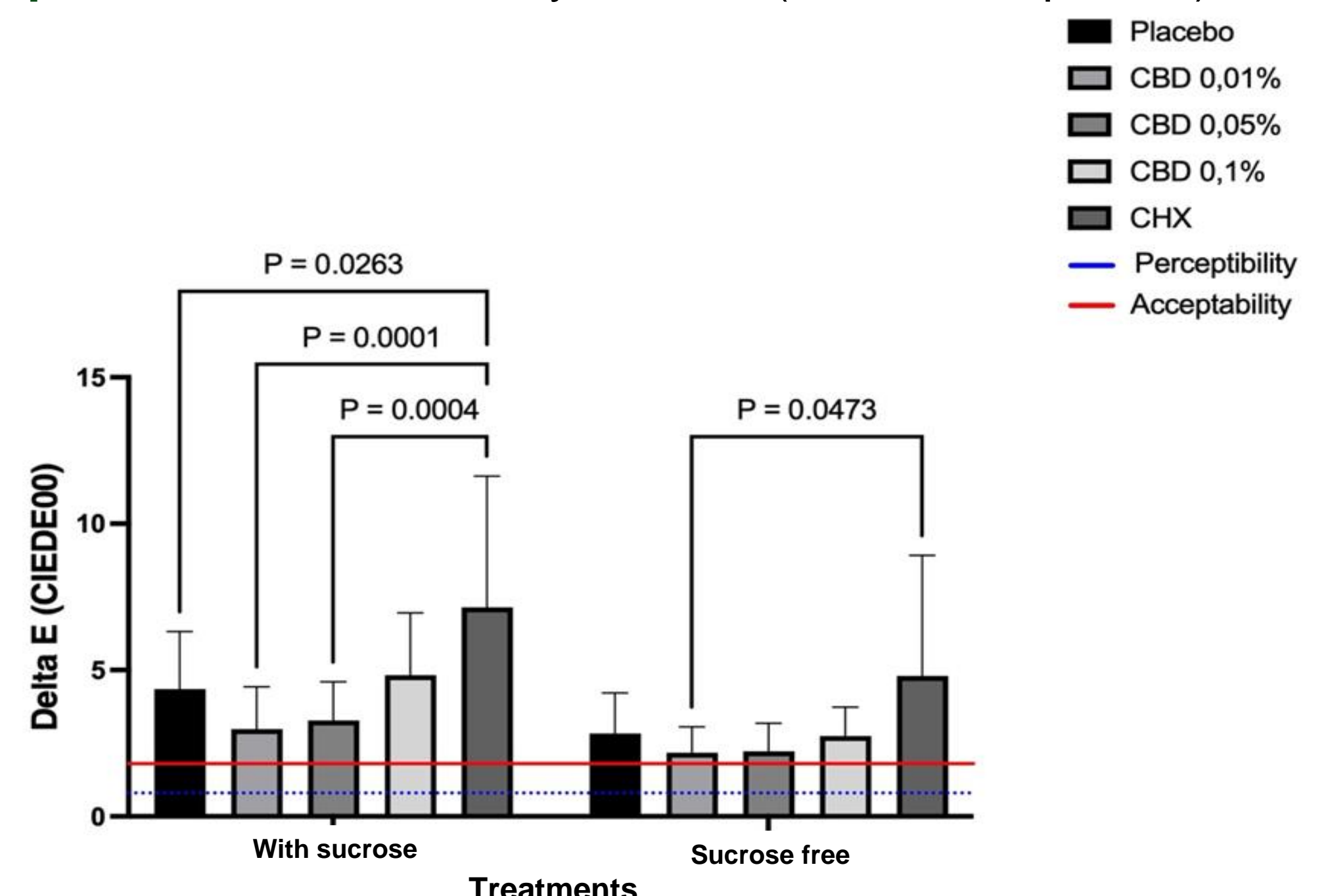
	Placebo	CBD 0,01%	CBD 0,05%	CBD 0,1%	CHX
With sucrose	6,8 (4,4-8,3) abA*	7,1 (4,3-8,8) bA*	6,7 (3,9-9,9) abA*	6,8 (3,0-8,2) abA*	6,0 (4,4-8,9) aA*
sucrose-free	6,1 (3,8-8,1) abA*	6,5 (4,6-8,0) aA*	6,2 (4,4-9,0) abA*	6,8 (5,0-9,2) aA*	5,4 (3,5-7,7) bA*

*Different letters, lowercase in the row and uppercase in the column, indicate statistically different results (p<0.05).

Table 4 - Yeast – Kruskal-Wallis (Dunn, p<0.05) – Median (minimum and maximum)

	Placebo	CBD 0,01%	CBD 0,05%	CBD 0,1%	CHX
With sucrose	1,1 (0-3,6) abA*	1,8 (0,0-3,9) aA*	1,5 (0,0-2,4) abA*	1,8 (0,0-4,3) aA*	0,3 (0,0-1,2) bA*
sucrose-free	1,0 (0,0-3,1) abA*	1,6 (0,0-1,2) bA*	0,5 (0,0-1,9) abA*	1,3 (0,0-3,6) bA*	0,0 (0,0-1,0) aA*

Graph 1 - Delta E00 – 2-way ANOVA (Bonferroni, p<0,05)



CONCLUSION

Moutrinses containing **CBD0.05%** showed potential for **reducing dental biofilm** without causing significant adverse effects on enamel properties.

REFERENCES

