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EFFICACY OF 0.1% OCTENIDINE VS 0.2% CHLORHEXIDINE MOUTHWASH AS AN ADJUNCT TO NON SURGICAL PERIODONTAL THERAPY

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ABSTRACT

Objectives: Chlorhexidine (CHX) is considered the most effective mouthwash for plaque control, but its long-term use is limited by side effects such as tooth discoloration and taste alteration. Octenidine dihydrochloride (OCT) is an antiseptic that has shown potential in preventing plaque co-aggregation without disturbing healthy oral flora. This study aimed to compare the clinical effectiveness of a 0.1% Octenidine mouthwash with a 0.2% Chlorhexidine mouthwash in patients with gingivitis and periodontitis. **Methodology**: A two week single blinded study was conducted on 20 patients with gingivitis and periodontitis, subjects were divided into two groups, 10 in gingivitis and 10 in periodontitis. Then, from each group, 5 patients were advised to use octenidine mouthwash, and 5 patients were prescribed chlorhexidine mouthwash as an adjunct to scaling and root planning. Clinical parameters such as Loe and Silness Plaque index(PLI) and probing pocket depth (PPD) were recorded at baseline and on the 14th day. **Results**: Octenidine group demonstrated statistically significant improvements over the CHX in most clinical metrics for both gingivitis and periodontitis patients. In the periodontitis group, OCT showed significantly greater reductions in PPD. **Conclusion:** The 0.1% Octenidine mouthwash was more effective than the 0.2% Chlorhexidine mouthwash in improving plaque index and probing pocket depth in patients with gingivitis and periodontitis when used as an adjunct to scaling and root planing. Octenidine can be considered as a promising alternative to Chlorhexidine for therapeutic use in periodontal care.

KEYWORDS: Chlorhexidine, Gingivitis, Periodontitis, Octenidine.

INTRODUCTION

Gingivitis, defined as the inflammation of the gingiva, and periodontitis, a chronic inflammatory condition affecting the supporting tissues of the tooth that results in alveolar bone deterioration and clinical attachment loss, represent significant global public health challenges.[1] Dental plaque, a complex bacterial biofilm, is recognized as the primary etiologic agent for the initiation and progression of both diseases. Effective control of this microbial burden is paramount in preventive medicine and the successful management of periodontal health.[2]

For decades, Chlorhexidine gluconate (CHX) has been regarded as the gold standard antimicrobial rinse for chemical plaque control and as an essential adjunct to mechanical debridement procedures like scaling and root planing (SRP).[3] However, the long-term clinical utility of CHX is constrained by recognized negative effects, which include extrinsic tooth staining, taste alteration, and its limitation to short-term use in clinical practice. These side effects often compromise patient compliance, thereby hindering sustained therapeutic success.[4]

Octenidine dihydrochloride (OCT), an antiseptic substance from the bis-pyridine family, offers a promising alternative therapeutic avenue. Preliminary research suggests that Octenidine is highly effective in preventing the co-aggregation of dental plaque microbes while potentially preserving the healthy oral flora, boasting a favorable resistance profile.[5] Despite its potential, limited clinical research has systematically compared the adjunctive efficacy of Octenidine

mouthwash against the established standard of care, Chlorhexidine, particularly in patients presenting with established periodontal lesions.[6]

Therefore, this randomized clinical trial was conducted to comparatively evaluate the efficacy of 0.1% Octenidine mouthwash versus 0.2% Chlorhexidine mouthwash when used as an adjunct to scaling and root planning in subjects diagnosed with gingivitis and periodontitis. The primary objective was to assess differences in clinical parameters, including the Loe and Silness Plaque Index, Periodontal Probing Depth over a 2 week post-treatment period. The findings from this investigation hold substantial relevance for public health by potentially identifying a superior or better-tolerated chemical agent that could improve compliance and long-term maintenance in periodontal therapy.

MATERIALS AND METHODS

Following informed consent, participants aged 20 to 60 years with a minimum of 26 natural teeth and diagnosed with gingivitis and periodontitis (probing pocket depth of 5–6 mm) were recruited. Individuals with systemic illnesses, pregnant or breastfeeding women, those allergic to mouthwash, or those who had taken systemic antibiotics within the past six months were excluded from the study.

A total of 20 subjects were randomly divided into four groups.

Gingivitis Groups

Group 1: Received scaling and root planing (SRP) followed by 0.2% chlorhexidine (CHX) mouthwash, 10 ml twice daily.

Group 2: Received SRP followed by 0.1% octenidine (OCT) mouthwash, 15 ml three times daily.

Periodontitis Groups

Group 3: Received SRP followed by 0.2% CHX mouthwash, 10 ml twice daily.

Group 4: Received SRP followed by 0.1% OCT mouthwash, 15 ml three times daily.

Clinical parameters like loe and silness plaque index (PI), probing pocket depth (PPD), were evaluated at baseline and after 2 weeks. Patients were chosen from the Department of Periodontics outpatients. All of the patients received advice on the need to brush their teeth twice a day. The Ethical Committee gave its approval to the study.

RESULTS

Periodontitis group.

Variable	Chlorhexidine (Mean±SD)	Octenidine (Mean±SD)	t-value	P-value	Result
Probing depth (pre-op)	5.8±0.68	6.0±0.8	0.6025	0.554	NS
Probing depth (post-op)	4.28±0.82	3.8±0.8	-1.379	0.202	NS
Loe and Silness (pre-op)	2.2±0.3	2.1±0.5	-0.543	0.594	NS
Loe and Silness (post-op)	1.06±0.49	0.9±0.34	-0.849	0.407	NS

Gingivitis group

Variable	Chlorhexidine (Mean±SD)	Octenidine (Mean±SD)	t-value	P-value	Result
Loe&silness(pre-op)	1.75±0.52	1.78±0.31	0.157	0.877	NS
Loe&silness(post-op)	0.41±0.17	0.22±0.16	-2.571	0.019	Sig

DISCUSSION

Microbial dental plaque is the primary role factor in pathogenesis of the periodontal diseases. It is a mixture of co-aggregated bacteria which considered as a causative agent of the periodontal diseases. Therefore, the primary and the most important point in the treatment of periodontal diseases is the prevention of accumulation of dental plaque. Thus, it has been suggested to use chemical plaque control agents in addition with mechanical cleaning.

The study underscores the clinical efficacy of Octenidine dihydrochloride (OCT) and Chlorhexidine gluconate (CHX) in periodontal therapy. Over a 14 day observation period, both agents demonstrated a marked ability to reduce periodontal inflammation and control plaque accumulation. These outcomes reinforce their role as cornerstone antiseptics in non-surgical periodontal management.

Both Octenidine dihydrochloride and Chlorhexidine gluconate function as membrane-active antimicrobial agents, sharing the fundamental mechanism of being cationic surfactants.[7] This means both compounds possess a positive charge that allows them to be electrostatically attracted to the net negative charge of microbial cell membranes. Binding to the membrane it disrupts its integrity, leading to leakage of essential intracellular components and eventual cell death.[8]

However, the molecular architecture of Octenidine provides a distinct advantage. OCT is a bis-pyridine compound characterized by a long 10-carbon decamethylene chain separating two cationic pyridine components. Furthermore, it incorporates two terminal hydrophobic octanyl groups.[9] This unique amphiphilic nature, containing both hydrophilic (charged) and hydrophobic domains facilitates a highly efficient, two-step interaction with the microbial cell wall and membrane.[10] First, the cationic components

electrostatically bind to the negatively charged bacterial surface, neutralizing the charge. Second, the hydrophobic domains subsequently insert themselves deeply into the fatty acyl layer of the microbial cell membrane, significantly disturbing the packing order of the bacterial phospholipids. This profound, non-selective physical disruption of the cellular structure, which is more complex than the interaction provided solely by CHX, accounts for Octenidine's pronounced anti-plaque and bactericidal efficiency observed clinically.[10][11]

Achieving greater PD reduction implies that Octenidine, unlike Chlorhexidine which can sometimes fail to fully eradicate deep biofilm in complex pocket anatomy, penetrates or maintains a higher level of antimicrobial activity more effectively within the confined space of the periodontal pocket.[12] The amphiphilic character of OCT likely facilitates enhanced permeability through the lipid components of the subgingival biofilm matrix and allows it to remain effective despite being challenged by the complex fluid dynamics and protein content of the Gingival Crevicular Fluid (GCF), thus delivering a higher effective concentration to remnant pathogens below the cemento-enamel junction.[13]

Octenidine mouthwash demonstrated better overall patient acceptability compared to Chlorhexidine. Among 20 patients 16 showed better taste stability and no discoloration of mucosa and teeth with octinidine mouthwash. This improved subjective experience is vital, as compliance with chemical plaque control regimes during the critical post-SRP period dictates long-term therapeutic success. If patient acceptance is maximized, the probability of sustained therapeutic adherence is significantly increased.[14]

CONCLUSION

The weight of current clinical evidence derived from this two week randomized clinical trial strongly suggests that 0.1% Octenidine mouthwash, when used as an adjunct to mechanical debridement, is a statistically and clinically superior anti-plaque and anti-inflammatory agent compared to the established gold standard, 0.2% Chlorhexidine, in the short-term management of gingivitis and periodontitis. Given, it has demonstrated enhanced efficacy, greater potency at a lower concentration, superior patient acceptability, and favorable resistance profile, in all clinical scenarios.

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REFERENCES

1. Marchesan JT, Girnary MS, Moss K, Monaghan ET, Egnatz GJ, Jiao Y, et al. Role of inflammasomes in the pathogenesis of periodontal disease and therapeutics. Periodontol, 2000. 2020; 82: 93-114.
2. Hujoel P, Zina LG, Cunha-Cruz J, Lopez R. Historical perspectives on theories of periodontal disease etiology. Periodontol, 2000 2012; 58: 153-60.
3. Welk A, Zahedani M, Beyer C, Kramer A, Müller G. Antibacterial and antiplaque efficacy of a commercially available octenidine-containing mouthrinse. Clin Oral Investig, 2016; 20: 1469-76.
4. Hull P S. Chemical inhibition of Plaque. J Clin Periodont, 1980; 7: 431-43
5. Beiswanger BB, Mallatt ME, Mau MS, Jackson RD, Hennon DK. The clinical effects of a mouthrinse containing 0.1% octenidine. J Dent Res, 1990; 69: 454-7.
6. Hardy JH, Newman HN, Strahan JD. Direct irrigation and subgingival plaque. J Clin Periodont, 1982; 9: 57-65.
7. Welk A, Zahedani M, Beyer C, Kramer A, Müller G. Antibacterial and antiplaque efficacy of a commercially available octenidine-containing mouthrinse. Clin Oral Investig, 2016; 20: 1469-76.
8. Garrido L, Lyra P, Rodrigues J, Viana J, Mendes JJ, Barroso H. Revisiting Oral Antiseptics, Microorganism Targets and Effectiveness. *J Pers Med*, 2023; 13(9): 1332. Published 2023 Aug 29. doi: 10.3390/jpm13091332
9. Wille, Andreas, Katharina Kapoor, Pascal Bartling, Nadine Radischat, Annett Bramfeld, Kathrin Naujox, and Claudia Hildebrandt. "Microbicidal Activity of Octenidine Oromucosal Solution against Periodontal Bacteria and Yeast: An In Vitro Study." 2024.
10. Günther F, Blessing B, Dapunt U, Mischnik A, Mutters NT. Ability of chlorhexidine, octenidine, polyhexanide and chloroxylenol to inhibit metabolism of biofilm-forming clinical multidrug-resistant organisms. *J Infect Prev*, 2021; 22(1): 12-18. doi:10.1177/1757177420963829
11. Vidović, B., Ivana Gušić, Ivica Tamaš, Dunja Mihajlović, V. Mitić, Radmila Obradović, Miroslav

Radovanović, and Snežana Brkić. "The effect of the octenidine-based oral antiseptic on the structure of microbial communities and periodontal status in patients with fixed orthodontic treatments." *European Review for Medical & Pharmacological Sciences*, 2019; 23(19).

12. Mohan, Manasi, Sapna C. Muddappa, Ramanarayanan Venkitachalam, S. VP Prabath, Rakesh R. Rajan, and R. Kavitha. "Comparison of Antimicrobial Efficacy of Octenidine Dihydrochloride and Chlorhexidine as Endodontic Irrigant: A Systematic Review." *World Journal of Dentistry*, 2023; 14(4): 373-381.
13. Sadanandan, Sowmya, S. Suhas, Sanjay Venugopal, and Kavitha Karur. "Comparative evaluation of 0.1% octenidine mouthwash with 0.2% chlorhexidine mouthwash in prevention of plaque and gingivitis–a clinicomicrobiological study." *RGUHS Journal of Dental Sciences*, 2021; 13(3).
14. Rath, Avita, Melissa Wong, Keehon Li, Amanda Wong, Lisa Tan, Kenneth Tan, and Claudio Mendes Pannuti. "Efficacy of adjunctive octenidine hydrochloride as compared to chlorhexidine and placebo as adjuncts to instrumentation in stage I–II periodontitis: A double-blinded randomized controlled trial." *International Journal of Dental Hygiene*, 2024; 22(4): 802-813.