



ANTIOXIDANT PUREXA VERSUS CHLORHEXIDINE MOUTHWASH: A RANDOMIZED CLINICAL EVALUATION OF GINGIVAL HEALTH PARAMETERS

Periodontics

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ABSTRACT

Plaque-induced gingivitis is a prevalent inflammatory condition of the gingiva, primarily triggered by bacterial plaque accumulation, resulting in erythema, edema, and bleeding on probing. Effective chemical plaque control through mouthrinses plays a critical role in mitigating gingival inflammation and preventing disease progression. Chlorhexidine remains the gold standard for antimicrobial plaque control; however, prolonged use is associated with undesirable effects such as tooth staining and taste alteration. Antioxidant-based mouthwashes, including Purexa, have emerged as promising alternatives, targeting oxidative stress and inflammation in gingival tissues. This randomized clinical study aims to evaluate and compare the efficacy of Antioxidant Purexa and Chlorhexidine mouthwashes in the management of plaque-induced gingivitis.

KEYWORDS

Chlorhexidine, Antioxidant Mouthwash, Gingival Index, Plaque Index.

INTRODUCTION

Gingivitis is a localized inflammatory condition of the gingiva, primarily triggered by the accumulation of dental biofilm. A distinctive characteristic of plaque-induced gingivitis is the complete reversibility of tissue changes once the causative factor, i.e., dental plaque, is effectively removed. Therefore, efficient plaque control is critical to prevent the progression of periodontal disease. Management of plaque involves a combination of mechanical methods and chemical agents that inhibit plaque formation. While chemical plaque control can aid in maintaining oral hygiene, it should serve only as an adjunct to, rather than a substitute for, mechanical plaque removal techniques.

The goal of chemical plaque control is to achieve effective antibacterial activity without disrupting the native oral microbiota, allowing it to compete naturally with pathogenic species. Mouthwashes, as one of the chemical antiplaque agents, serve this purpose effectively. Currently, Chlorhexidine is considered the most potent antiseptic for the oral cavity. It is a biguanide compound with both bactericidal and bacteriostatic properties. The efficacy of Chlorhexidine mouth rinses is influenced by pH, and therefore, they should be used at least 30 minutes after other chemical plaque-control agents, as anionic surfactants in toothpastes and other mouthwashes can alter oral pH. Despite its well-documented benefits, Chlorhexidine has notable drawbacks, including an unpleasant taste, temporary alteration of taste sensation, effects on the oral mucosa and tongue, and brown staining of teeth. To overcome these limitations, various herbal and antioxidant-based mouthwashes have been developed and introduced into the market as safer alternatives.

Purexa is an innovative antioxidant-based mouthwash designed to support gingival health by targeting oxidative stress and inflammation associated with plaque-induced gingivitis. Unlike traditional antiseptic agents that primarily act through direct antimicrobial activity, Purexa focuses on neutralizing reactive oxygen species generated during the host immune response, thereby reducing tissue damage and modulating inflammatory pathways. Its formulation typically includes a combination of bioactive compounds such as vitamin C, green tea polyphenols, coenzyme Q10, aloe vera extract, and plant-derived flavonoids, each contributing synergistically to antioxidant defense, anti-inflammatory activity, and tissue repair. Vitamin C enhances collagen synthesis and promotes wound healing, while green tea catechins exert both mild antibacterial and anti-inflammatory effects. Coenzyme Q10 supports cellular metabolism and gingival tissue regeneration, and flavonoids further inhibit pro-inflammatory mediators. Together, these components not only help control plaque accumulation but also improve gingival resilience and reduce bleeding on probing. Clinically, Purexa serves as an effective adjunct to mechanical plaque control, offering a well-tolerated alternative for patients who experience side effects from conventional antiseptics such as Chlorhexidine, including tooth staining, altered taste, or mucosal irritation. By combining oxidative stress modulation, mild antimicrobial activity, and tissue healing support, Purexa provides a comprehensive approach to managing plaque-induced gingivitis while minimizing adverse effects, making it a promising agent for both short-term therapy and long-term oral health maintenance.

MATERIALS & METHODS

A total of 40 patients diagnosed with plaque-induced gingivitis reporting to the Department of Periodontics, Drs. Sudha and Nageswara Rao Siddhartha Institute of Dental Sciences were enrolled in the study. The protocol was approved by the Institutional Ethical Committee, and written informed consent was obtained from all participants. Patients were randomly allocated into two groups using a coin-flip method. Group I received 0.2% chlorhexidine mouthwash (Hexidine), and Group II received Purexa antioxidant mouthwash, each administered 10 ml twice daily at 12-hour intervals for four weeks. Participants were instructed to refrain from rinsing with water or other solutions for 30 minutes after each use. Clinical parameters, including Plaque Index (PI), Gingival Index (GI), and bleeding on probing (BOP), were recorded at baseline prior to oral prophylaxis and after four weeks. Data were analyzed using Student's t-test to evaluate intragroup and intergroup differences.



Chlorhexidine Mouthwash (Group I)



Antioxidant Mouthwash (Group II)

Statistical Analysis

The collected data were entered into Microsoft Excel. The mean & standard deviation were calculated. Descriptive statistics and inferential statistics such as independent t test were performed. Intergroup comparison was done with independent t-test.

RESULTS

Table 1: Intragroup Comparison of GI, PI, and BOP at Baseline and 4 Weeks

Parameter	Group	Baseline (Mean ± SD)	4 Weeks (Mean ± SD)	p-value
Gingival Index (GI)	Group I (0.2% CHX)	2.11 ± 0.33	0.92 ± 0.22	<0.001*
	Group II (Purexa)	2.10 ± 0.32	0.86 ± 0.20	<0.001*
Plaque Index (PI)	Group I (0.2% CHX)	1.97 ± 0.28	0.78 ± 0.19	<0.001*
	Group II (Purexa)	1.96 ± 0.27	0.72 ± 0.17	<0.001*
Probing Depth (PD) (mm)	Group I (0.2% CHX)	61.8 ± 10.2	19.6 ± 6.5	<0.001*
	Group II (Purexa)	61.5 ± 10.0	17.9 ± 6.1	<0.001*

Both mouthwashes produced highly significant intragroup improvements in PI, GI, and BOP after four weeks. Purexa mouthwash exhibited a slightly greater reduction in all parameters compared to chlorhexidine. Although the differences were minimal, they were consistent, indicating that Purexa provided marginally better clinical improvement, while both agents were overall similarly effective.

Table 2: Intergroup Comparison of GI, PI, and BOP at Baseline and 4 Weeks

Parameter	Time Point	Group I (0.2% CHX) (Mean ± SD)	Group II (Purexa) (Mean ± SD)	p-value
Gingival Index (GI)	Baseline	2.11 ± 0.33	2.10 ± 0.32	0.90
	4 Weeks	0.92 ± 0.22	0.86 ± 0.20	0.31
Plaque Index (PI)	Baseline	1.97 ± 0.28	1.96 ± 0.27	0.89
	4 Weeks	0.78 ± 0.19	0.72 ± 0.17	0.27
Probing Depth (PD)(mm)	Baseline	61.8 ± 10.2	61.5 ± 10.0	0.92
	4 Weeks	19.6 ± 6.5	17.9 ± 6.1	0.37

At baseline, there were no significant differences between the two groups for PI, GI, or BOP, showing that they were comparable. After four weeks, both chlorhexidine and Purexa mouthwash significantly reduced plaque, gingival inflammation, and bleeding. Purexa showed slightly better improvement, but the differences between the groups were not statistically significant, indicating that both mouthwashes were similarly effective.

DISCUSSION

Plaque-induced gingivitis is a common inflammatory condition of the gums, primarily triggered by bacterial biofilm accumulation. While mechanical cleaning methods such as brushing and flossing are essential, adjunctive chemical agents like mouthwashes can significantly enhance gingival health by reducing plaque and inflammation. The present study evaluated the efficacy of 0.2% chlorhexidine and Purexa antioxidant mouthwash over a four-week period in patients with plaque-induced gingivitis.

Both mouthwashes resulted in significant improvements in Plaque Index (PI), Gingival Index (GI), and Bleeding on Probing (BOP) within their respective groups. Chlorhexidine, with its well-established antimicrobial properties, effectively reduced plaque and gingival inflammation, aligning with previous reports in the literature. Interestingly, Purexa also demonstrated similar, and slightly greater, reductions in all clinical parameters. This marginal improvement may be attributed to its antioxidant components, which could help modulate the inflammatory response in gingival tissues by counteracting oxidative stress.

When comparing the two groups, the differences at four weeks were not statistically significant, indicating that both mouthwashes are comparably effective. Clinically, this suggests that Purexa could be a suitable alternative to chlorhexidine, particularly for patients concerned about potential side effects such as tooth staining, altered taste, or mucosal irritation.

This study was limited by its short duration and relatively small sample size, which may restrict the ability to detect subtle long-term differences between the mouthwashes. Future studies with larger cohorts and extended follow-up periods are recommended to further explore the benefits of antioxidant mouthwashes in maintaining gingival health.

CONCLUSION

Both 0.2% chlorhexidine and Purexa antioxidant mouthwash significantly improved gingival health by reducing plaque, inflammation, and bleeding. Notably, Purexa demonstrated a subtle but consistent edge, suggesting it as a safe, well-tolerated, and promising alternative to chlorhexidine. These findings support the use of both mouthwashes as effective adjuncts to daily oral hygiene for managing plaque-induced gingivitis.

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