Comparison between 3 Different Types of Mouthwash on the Healing Process of Periodontal Diseases

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Abstract

Dental plaque is the principal etiological agent for the development and progression of gingival and periodontal diseases. Three different mouthwash types were compared in this study for the periodontal healing process based on the results. For all bacterial strains, the culture type collection is used. The serial dilution process is used for preparing every mouthwash and adding it to the tubes with a specific dilution. In certain microorganisms of the respective mouthwash, the last tube dilution that does not show any turbidity will be considered MIC. The three types of mouthwashes were compared in terms of the ability to inhibit microbial growth. Twenty-four hours after the agar was solidified and the colony forms (CFU) units counted, the plates were incubated. This study showed that bacterial growth inhibition might occur in the three types of mouthwash. Boht, Behsa and Kin-gingival mouthwashes had a significant difference in their antimicrobial effect. This study showed that they were unable to perform s after 24 hours of in vitro incubation while the bacterial count was lowered after two weeks of in vivo use in the boht washings. Continuous exposure to bacteria may be necessary to wash the mouth, especially for Behsa and Boht. It is difficult to remove all bacteria from the mechanical plaque controls; antibacterial mouthwash can cause additive. In the current study, three types of mouthwash have compared antimicrobial effects. The results showed only that bacterial counts are affected by mouthwash. Based on this study's results, Boht mouthwash is more effective than Kin Gingival and Behsa mouthwash for oral microorganisms, but further clinical studies are necessary to confirm our findings.

Keywords: *Dental plaque, Periodontal diseases, Mouthwash, Bacterial, Boht, Behsa, Kin-gingival*

Introduction

A variety of microorganisms, mainly bacteria, can be colonised and developed through the mouth; one influence factor in teeth and periodontal tissue destruction is bacterial plaque [(1)]. The primary etiological factor for tooth decay, gingivitis, and periodontal disease is dental plaque. Dental and periodontal conditions are diseases associated with the prevention of biofilm. Dental plaque is the primary etiological agent in gingival and periodontal disease development and progression [(2)]. Dental and periodontal susceptibility varies according to risk factors, including genetics, systemic factors and oral hygiene [(3)].

The primarily mechanical removal of plastic plaque through regular tooth brushing is used to prevent different periodontal diseases' development and progression [(4)]. The use of mouthwash to control plaque bacteria is about 5000 years long when the Chinese suggested that urine for children be used to prevent gingivitis [(5)]. Various bacterial and fungal communities integrated into a highly specialised extracellular matrix are present in oral biofilms. The decrease in oral biofilm accumulation (dental plates) and the control/reduction of dental disease risks are essential for good oral care practices [(6)].

The primary effect of Mouth rinses on the supragingival and marginal plaque is limited due to tight gingival contact with the tooth in healthy persons [(7)]. It

must always be used in conjunction with mechanical plaque control measures but should never be used solely as a means of oral hygiene [8]. Mouth washing can help prevent oral infections, reduce inflammation, decrease halitosis and local fluoride prevent caries. Mouth washing has several preventative and therapeutic purposes. Usually, mouthwash is based on anecdotal evidence instead of on-the-counter (OTC) scientific evidence [9].

The use of mouth washing and chemical cleansing of teeth is typically to reduce dental accumulation [10]. It can even be used as oral care only for patients who cannot brush their teeth either after surgery or due to the motor or cognitive constraints [11]. Chlorhexidine (CHX) is long considered a short-term gold standard of action for bacteria, spores and fungi, including many antiseptic components of oral mouth washing. Mouthwash is a safe and effective anti-plaque and antimicrobial agent, which prevents adhesion, colonisation, metabolic activity and bacterial proliferation [12]. Due to the variety of antibacterial efficacy, cytotoxicity and kinetics of different solutions, it isn't easy to decide whether to use a particular mouthwash. In decreasing oral microbial counts, CHX is regarded as the gold standard [13].

In preventing periodontal illnesses, mechanical plaque control measures (tooth brushing and flossing) are essential. Benzydamine chloride can also help avoid periodontal diseases by chemical plaque control measures, such as utilising only 0.12 or 0.2 per cent mouthwashes preparations with chlorhexidine [14]. If there is unevenness between the host defence and the bacterial niche, periodontitis may occur. The primary aetiology of the gingival tissues and the paradental attachment is the bacterial plaque [7]. Mechanic removals of the plaque or calculus and topical antimicrobial agents that can inhibit periodontal pathogens are commonly used in periodontal therapy. Moreover, in current periodontal and other applications, extracts from plants have been offered as anti-plaque agents [15].

Body rinse can produce a therapeutic effect on the tooth's entire surface, including interproximal areas where toothpaste is very effective [16]. Although it is effective in plaque control, chlorhexidine cannot be used for a long time because of some of its unpleasant side effects after a long time. The use of mouthwash in oral hygiene is ancient, in contrast to the popular notion. The use of mouthwash originates from religious codes of behaviour such as the outdated Manu laws of India that must rinse their mouths after a meal [11]. This study aimed to compare three different mouthwash types for the periodontal healing process based on the findings.

Methodology

This study aimed to determine the effect of three types of mouthwash on the treatment of periodontal disease. The impact on Kin Gingival, Behsa and Boht are assessed on the selected bacterial. Thus, minimum inhibiting concentrations (MIC) were used. The collection of culture type is used for all bacterial strains. The serial dilution method has been used to prepare every mouthwash with specified dilution and added to the tubes [3].

The last tube or the last mouthwash dilution not showing turbidity is considered the MIC in certain microorganisms of the respective mouthwash. In terms of the ability to inhibit microbial growth, the three mouthwash types' MIC was compared [17]. The tubes without turbidity (transparent) were then transferred to a solid media after 24 hours of incubation, which showed bacterial growth inhibition with the respective mouthwash and evaluated for the microbial growth to determine the MBC of mouthwash. In terms of the solid medium culture, the last tube, which was negative, indicated the minimum concentration (MBC) of bactericidal fluid [17].

For all bacterial strains, this procedure was done. 0.5 ml diluted samples have been transferred in empty plates for counting bacterial colonies. The agar was cooled to 50°C and poured into each plate. The pouring of the agar was done into each plate. The plates were incubated 24 hours after the agar had solidified and the colony forms (CFU) units counted. On dilute samples collected before the patients' used mouthwashes or water, the zone of growth inhibition test was done in vitro [8]. On the agar surface with the swab, bacteria were streaked. The filter

paper impregnated disks were then placed at the centre of each section and slightly pressed to the agar with the water and mouthwash. The plates were then incubated for 24 hours at 37°C inverted positions. The inhibition zone was measured after 24 hours [10].

Results

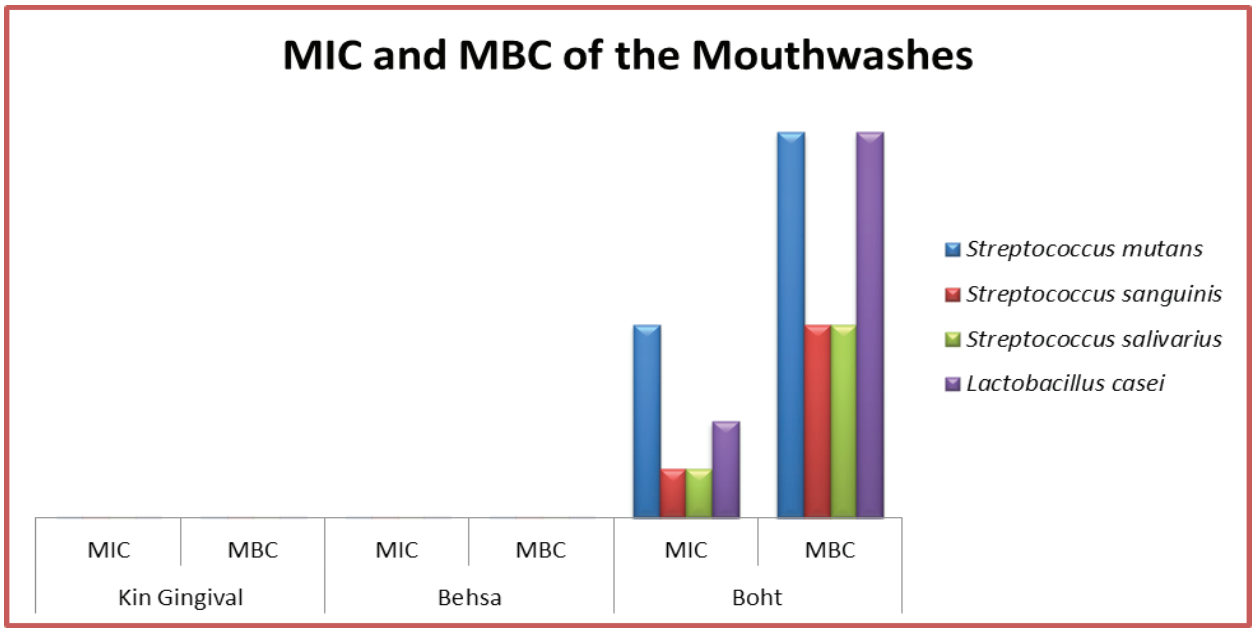

Figure 1: The MIC and MBC effect of the three mouthwash on the selected bacteria

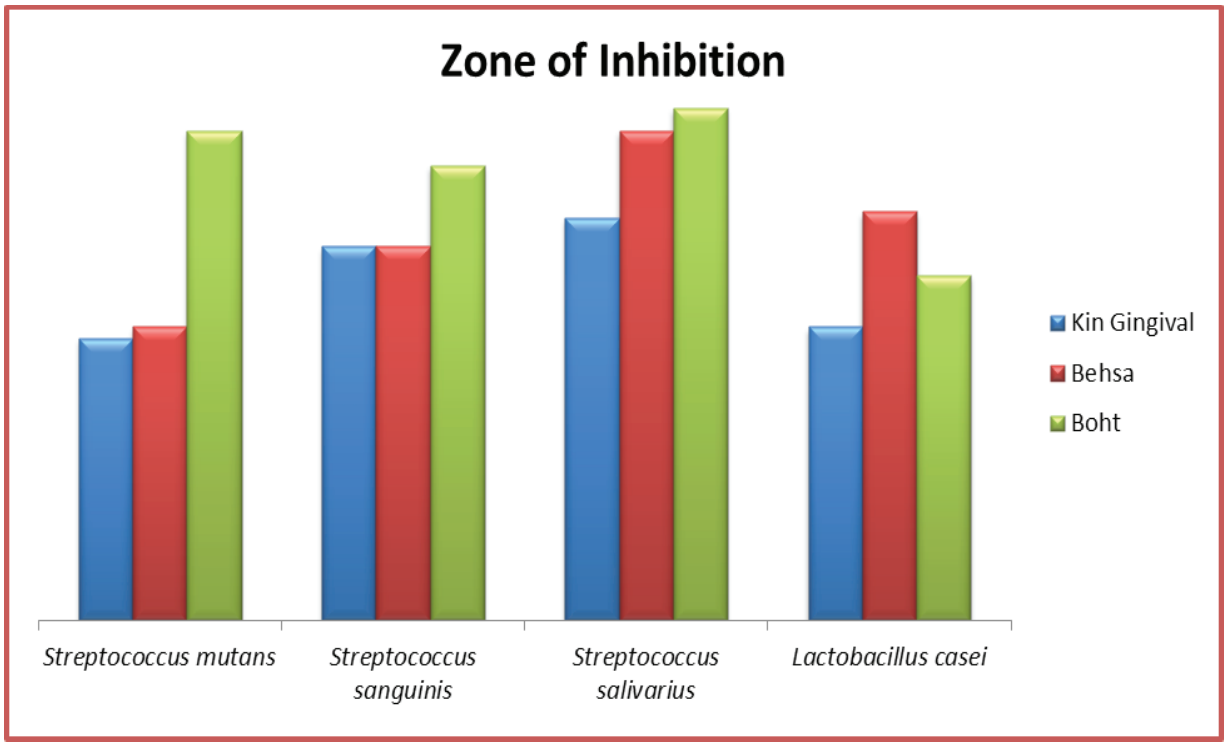

Figure 2: The effect of the three mouthwash on the zone of inhibition in selected bacteria

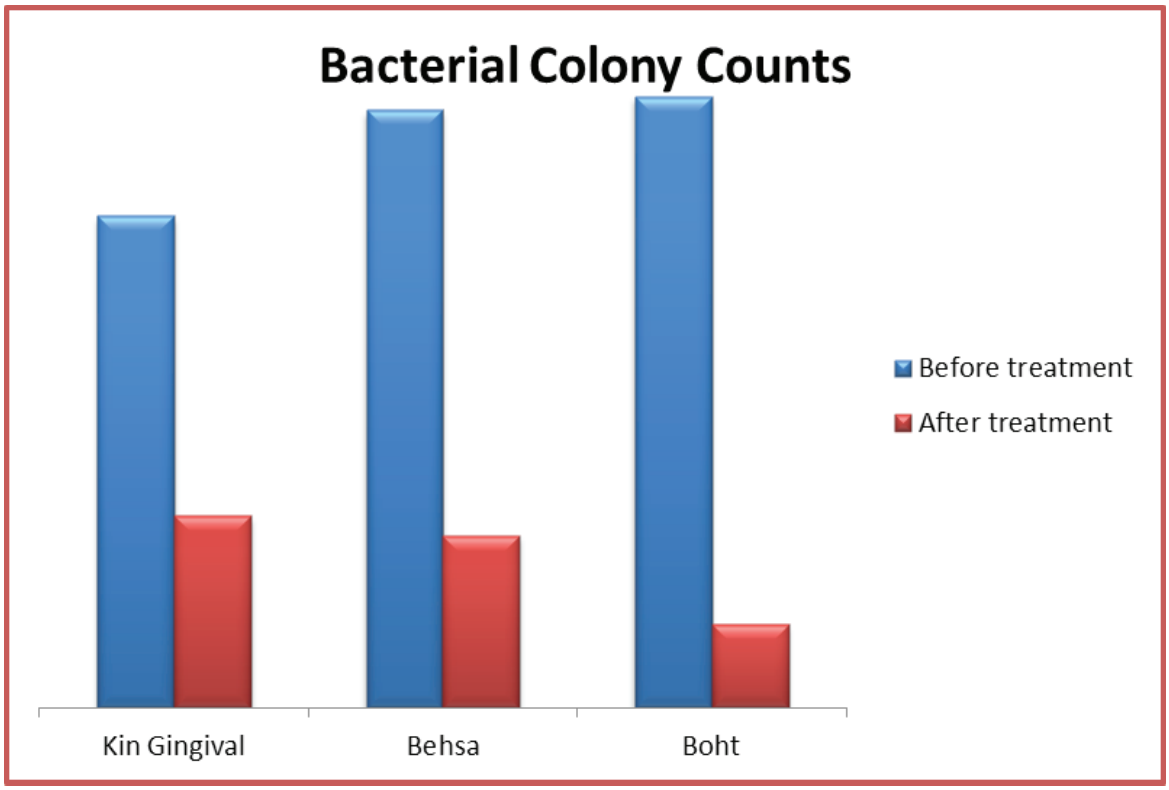

Figure 3: The effect of the three mouthwash on bacterial colony counts

Discussion

This study showed that the three types of mouthwash could cause bacterial growth inhibition. The antimicrobial effect of Boht, Behsa and Kin, gingival washes of the gum, were significantly different (Figure 1). The SM growth inhibition areas in the three study groups are shown in Figure 2. Two-week use of Boht, Behsa and Kin gingival mouthwash, before and after periodontal patients, is summarised in Figure 3. In patients with periodontal disease, the summary of bacterial counts is also presented in Figure 3 before and after two weeks.

Mueller Hinton Agar was the artistic medium of this study, used as a growth speciality for those bacteria in procedures commonly conducted for aerobic and optional anaerobic bacteria (neogen.com). Therefore, it would appear logical to assume that both aerobic and optional bacteria cultivated on agar plates were actual.

The results of this study demonstrated a difference in the antibacterial effects shown by Behsa and Boht, as they were unable to make s after 24 hours of in-vitro incubation, while boht washings showed a reduced bacterial count after two weeks of in-vivo use. The culture medium was treated only once and then after 24 hours in inhibition tests with mouth washing. At the same time, bacteria were repeatedly exposed to the effect of mouth washing for the in vivo testing for two weeks. The results were obtained after 24 hours only. It may require continuous exposure to mouth washing, especially for the Behsa and Boht, to reduce bacterial counts. Mechanical plaque controls are difficult to remove all bacteria; antibacterial mouthwashes may help additives to this effect. Antimicrobial effects were compared in three types of mouthwash in the current study.

The role of bacterial plaques was demonstrated by dental caries aetiology and by periodontal diseases. The mechanical methods of plaque inhibition are limited; this problem is proposed to chemical methods for plaque inhibition [6]. Therefore, the utilisation of mouth washing as disinfectants can help mechanically

reduce plaques. Mouth washing takes place in few ways, including apoptosis, bacterial growth inhibition, metabolic inhibition of cells, and bactericidal inhibitions based on their concentration [11].

A great deal of study has shown that washing chlorhexidine's mouth is the best way to wash the mouth. The supremacy of most studies comparing mouthwashes, with only a few studied products competing in antibacterial characteristics with chlorhexidine, has been demonstrated. Streptococci are the primary etiologic agent for tooth decay [18].

Removal of streptococci prevents plaque formation and disease spreading. In the study of S. mutans susceptibility to mouthwashes, Jarvinen et al. showed that S. mutans is resistant to antimicrobial agents. S. mutans have the highest mouthwash strength and even greater varnish resistances [19].

We also have confirmed that S. mutans are somewhat resistant to chlorhexidine. The most significant anti-caries effect of fluoride chlorhexidine was achieved using a study comparing Behsa polyphenol extracts with fluoride washes, showing its synergistic effect on microorganisms [20].

A study comparing oral-B with other mouthwashes has demonstrated greater efficacy in reducing the S. mutans by washing Boht in plaques around orthodontic brackets, indicating high antimicrobial activity mouth [14]. Kin Chlorhexidine Gingspace effectively eliminates Streptococci causing decay and beneficial antimicrobial and anti-gingival effects, as they support initial plaques in these microorganisms. Studies have shown that a higher concentration of the antimicrobial effect. The main impact on the microorganism concentration is Kin gingival mouthwash [20].

The first microorganisms to develop dental caries are lactobacilli and chemical or mechanical removal. The differences between the chlorhexidine compound may lead to previous studies since different combinations have other products [21].

Streptococcus mutans are the primary etiologic agent for dental caries. It may adhere to the acquired film as the first step in plaque formation. By eliminating this bacterial species, I prevent plaque formation and caries development [7]. Mechanical methods of plaque inhibition have several limitations; dental plaque inhibition techniques have therefore been suggested. The use of disinfectants to wash the mouth can help to reduce plaque. The effect of Behsa mouthwash on SM inhibition has been evaluated and compared with Boht and Kin Gingival mouthwash's effectiveness [22].

The results showed that all three washers could inhibit SM's spread with the highest Boht-inhibiting effect. Many oral studies in microorganisms have shown that Boht is the most appropriate gold standard for chemical treatment with SM and dental cavities. The study showed the inhibition by Boht containing mouthwash and Total Care Kin gingival of the formation of the plaques by various Streptococci species [23]. They also say Boht's mouthwash is more efficient than Total Care Kin's gingiva mouthwash. Dental caries and pathology decreased, damaging the innocent bacterial species that competed with SM effectively inhibited by washed-in [1].

Boht's positive effect on reducing the SM and Lactobacillus colonies has been described in the literature. Boht is a large anode and adsorbs the tooth, plaque and mucus surface and increases adsorption to the above characters by its cationic nature. The extracellular polysaccharides cause the absorption of this antibacterial mouth washing [24].

However, previous authors, contrary to this study, have shown a better effect on the Kin gingival mouthwash plankton and biofilm bacteria than Boht (diluted). Boht also decreased the number of plaques and gingivitis, but no antibacterial activity existed when Boht was diluted. In its antimicrobial activity, Boht concentration appears to play a vital role [2].

Another discovery of this study was Behsa mouthwash's best, higher, antibacterial effect than Kin Gingival mouthwash. The essential oils available are kin gingival. The antimicrobial activity of Kin gingival against oral microorganisms has already been evaluated and has been confirmed [2].

The main flavonoids in tea are epigallocatechin-3-Gallate and epicatechin. The catechin's anti-cancer activity may be attributed to a direct anti-bactericidal effect on SM inhibition adherence to tooth surfaces. Behsa purifies the oral cavity, and reduced dental caries affects people who drink large quantities of Behsa [8]. The combination of several antibacterial agents in a single product is one way of increasing anti-plaque efficiency. In Behsa mouthwashes, the higher antibacterial effect is higher than that of Kin gingival, given confirmations from various studies on the impact of Behsa extract and Kin Gingival mouthwashes in SM [25].

The positive effect of Behsa extract on the decrease in SM and Lactobacillus colony figures has previously been demonstrated in line with this study. Contrary to current research, the use of Behsa extract mouthwash has been shown to reduce the number of oral Kin Gingival-like micronutrients and have similar implications for both mouthwash types [17]. The differences in the concentration of active agents in the formulation of mouth washing can be due to the study results. Unfortunately, the manufacturer's Behsa concentrations in the Kin gingiva mouthwash have not been reported, and studies' attention is not similar [26].

Therefore, Boht may be used every day as the natural component is present in Behsa and the tooth's lack of dental colour potentials [5].

Conclusion

The results showed just that mouthwash affects bacterial counts. Since the oral cavity for commensal species has nevertheless played a positive part, there is still discussion of the need to maintain a constantly low number of bacteria within the mouth. This study demonstrated that three types of mouthwash could reduce the number of bacteria in the oral cavity. The S. mutans proliferation was more efficient than Kin gingival due to the Behsa containing a mouthwash. But Boht was less potent than both types of mouthwash. This study helps doctors to select the best antimicrobial agent on the market. Based on this study's findings, boht mouthwash is more effective for oral microorganisms than Kin Gingival and Behsa mouthwashes, but further clinical studies are required to confirm our findings.

Conflict of Interest: No

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Ethical Clearance: Not Required

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