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“Comparative Evaluation of 3 Commercial Mouthwash Formulations on Clinical Parameters of  
Chronic Gingivitis”

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### **Summary of the Article:**

Shahabe Saquib Abullais, Sabiha Ilyas Patel, Elyas Ali Asiri, et al. conducted a double-blind randomized control trial in order to test alternatives to Chlorhexidine. The study took place in Abha, Saudi Arabia at a dental institute funded by the Deanship of Scientific Research, at King Khalid University. The study was published in Medical Science Monitor on September 2nd, 2022 (<https://medscimonit.com/abstract/full/idArt/937111>). 45 patients were split into 3 random groups, they either used Chlorhexidine, Manuka honey rinse (Alpine), or a probiotic rinse (Pro-Dental). Over the course of 28 days, they used GI, BI, and PI to monitor changes in all patients. At the end of 28 days, the researchers came to the conclusion that the manuka honey rinse was just as efficacious as Chlorhexidine.

### **Article Information:**

The article's title is “Comparative Evaluation of 3 Commercial Mouthwash Formulations on Clinical Parameters of Chronic Gingivitis.” The study's authors are Shahabe Saquib Abullais, Sabiha Ilyas Patel, Elyas Ali Asiri, et al. The article was originally published in Medical Science Monitor on September 2nd, 2022 (<https://medscimonit.com/abstract/full/idArt/937111>). DOI for the article is ([10.12659/MSM.937111](https://doi.org/10.12659/MSM.937111)), and the PubMed article is available at (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9447349/>). The authors disclosed that there is no conflict of interest in the study, and was funded by the Deanship of Scientific Research at King Khalid University located in Abha, Saudi Arabia. Furthermore, the university used the Large Research Group Project to provide funding for the study.

### **Study Analysis:**

**Type of Study:** The type of study conducted was a double-blind, randomized control trial. The study was conducted in Saudi Arabia at a dental institute in the southwest region, between the second and fourth quarter of 2018. **Study Purpose:** The authors conducted this study out of a desire to seek out alternatives to Chlorhexidine for long-term gingivitis control. Before the study, Chlorhexidine was considered the gold standard, not just for gingivitis patients, but also periodontitis. Herbal remedies and alternative medicine continues to raise in popularity, the authors wanted to see how certain alternative therapies would work when compared to Chlorhexidine. Due to the negative long-term side effects of Chlorhexidine, ie. dry mouth, staining, and sensitive

mucosa, the authors desired to find an alternative that was just as efficacious without the negative side effects.

**Experimental Design:** There was a total of 45 patients, selected from an original group of 70, all of which had moderate plaque, they were then randomly allocated into three separate groups. Group 1 used Chlorhexidine, Group 2 used Manuka honey mouthwash, and Group 3 used Pro-Dental mouthwash consisting of probiotics. PI, GI, and BI were recorded on the first day to establish a baseline, along with days 7, 14, and 28. Chlorhexidine was considered to be the control group since the authors wanted to compare alternatives to this “gold standard”. Further criteria for the selected patients were as follows, age 20-40 with a complete dentition, no history of tooth loss, with mild to moderate gingivitis. The patients all had class 1 occlusion, were not on any medications, no smokers, none were pregnant, along with no perio patients.

The study was conducted over a time period of 28 days, with a total of four checkups to reevaluate PI, GI, BI. Plaque Index (PI) measured the amount of visible dental plaque, besides third molars. Gingival Index (GI) checked for edema, redness, swelling, and spontaneous bleeding. Modified Sulcular Bleeding index (BI/MSBI) mainly checked for BOP with gentle probing. Each of these markers was rechecked on days 1, 7, 14, and 28 with all 3 groups. The researcher's statistical analysis used frequency distribution, mean (continuous variable), and standard deviation. To assess homogeneity among the 3 groups the researchers used a chi-square test. Analysis of Variance (ANOVA) and Bonferroni correction were utilized to compare how similar or different the groups were from one another. They also were able to test the averages between groups, making sure that baseline measurements were “normal”. Results were considered “important” if P value was less than 5%, they used SPSS software to conduct all of these algorithms. During each visit, two different examiners checked each clinical parameter, and one examiner checked the same parameter twice to make sure the results were consistent.

**Results:** Results differed on all three days after day 1, baseline. At the end of the 28 days, Chlorhexidine had the largest impact (inhibition) on the plaque index, however, was only behind by 0.05. Furthermore, manuka outperformed with Gingival Index and Bleeding Index. For the entire study, Chlorhexidine and Manuka were neck and neck in all parameters. The probiotic mouthwash

did improve the clinical parameters, however, it lagged behind CHX, and Manuka by an average of 0.2 points per clinical parameter.

The exact data is as follows, Plaque Index from baseline, to after 28 days of treatment. CHX Baseline: 1.35 (SD  $\pm$  0.23), day 28: 0.66 (SD  $\pm$  0.11). Manuka Baseline: 1.43 (SD  $\pm$ 0.21), day 28: 0.71 (SD  $\pm$ 0.15). Pro-Dental probiotic Baseline: 1.31 (SD  $\pm$ 0.16), day 28: 0.87 (SD  $\pm$ 0.13). Moving on to Gingival Index, CHX Baseline: 1.35 (SD  $\pm$ 0.12), day 28: 0.61 (SD  $\pm$ 0.16). Manuka Baseline: 1.39 (SD  $\pm$ 0.19), day 28: 0.61 (SD  $\pm$ 0.19). Pro-Dental Baseline: 1.41 (SD  $\pm$ 0.23), day 28: 0.89 (SD  $\pm$ 0.14). Last we have Bleeding Index, CHX Baseline: 0.93 (SD  $\pm$ 0.17), day 28 0.46 (SD  $\pm$ 0.15). Manuka Baseline: 0.98 (SD  $\pm$ 0.16), day 28: 0.38 (SD  $\pm$ 0.19). Pro-Dental baseline: 1.03 (SD  $\pm$ 0.17), day 28: 0.55 (SD  $\pm$ 0.10).

**Conclusion:** The authors are hopeful that this shows the efficacy of manuka honey mouthwash, as an alternative to Chlorhexidine. It is important to note that when compared to previous studies the authors note that they used a specific brand of manuka rinse that seems to be higher in the manuka ingredient which could lead to a decrease in overall inflammation. Furthermore, herbs and essential oils were added in the formulation of the manuka rinse (Alpine) which could have impacted results. The authors contribute to the efficacy due to manuka's naturally high content of antioxidants, polyphenols, and the bacteriocidal effect of hydrogen peroxide. The researchers propose that manuka honey mouthwash of this concentration should be studied further as an effective alternative to Chlorhexidine for long-term control and reduction of mild to moderate gingivitis.

**Impression:** I found this article to be truly fascinating! There are so many patients that are misinformed about dental chemicals such as fluoride, or chlorhexidine. This leads them to refuse treatment, or the implementation of efficacious at-home care. With the rise of alternative medicine, I was thrilled to see a study focusing on alternatives. One aspect I am leery on is the popularity of manuka honey. Similar to many “super foods” many industries tend to hype it up in research articles and pump it into every product. The main issue is that most of these stem from unique ecosystems. In this case, Manuka stems from Australia, and New Zealand, nowhere else. There is a possibility that these products may not be ethical, or environmentally friendly. Perhaps if labs could find a way to replicate the chemical compounds that researchers believe to be the most efficacious would be a

win win for all parties. I look forward to learning more about holistic and alternative treatments that are backed by science so I can be better prepared to help patients of all backgrounds and beliefs!