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Editorial Letter

Effectiveness of Mouthwashes Based on Ozonated Oil

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Dear Chief Editor,

The growing interest in alternative antimicrobial strategies in dentistry has led to increasing attention toward ozone-based therapies, particularly in the form of ozonated oil formulations. These compounds have been proposed as promising adjuncts in oral hygiene due to their antimicrobial, anti-inflammatory, and healing properties, potentially offering advantages over conventional antiseptics. Ozone (O_3) is a triatomic molecule characterized by a strong oxidative capacity, enabling it to react with lipids, proteins, and nucleic acids, ultimately leading to microbial cell disruption and death [1]. This mechanism supports its activity against a wide range of microorganisms, including Gram-positive and Gram-negative bacteria, fungi, and viruses. In the oral environment, ozone has shown effectiveness against key periodontal pathogens, suggesting its relevance in the management of oral diseases [2]. Due to the instability of ozone gas and challenges in its direct application, alternative delivery systems such as ozonated water and ozonated oils have been developed. Ozonated oils, produced through the controlled ozonation of vegetable oils, contain bioactive compounds such as ozonides and lipoperoxides, which contribute to their biological activity [3]. These compounds are believed to decompose upon contact with tissues, releasing reactive oxygen species, including hydrogen peroxide. This process not only has antimicrobial effects, but it also helps control inflammation and speed up tissue repair [4]. Additionally, ozonated oils may interfere with microbial metabolism and support local immune responses. In dentistry, ozonated oil-based mouthwashes have been investigated for their role in plaque control and periodontal health. Dental plaque is a complicated biofilm that causes cavities and gum disease. Despite chlorhexidine being the gold standard, its prolonged use is linked to side effects like tooth staining and taste alteration [5]. Several studies indicate that ozonated oil-based mouthwashes may diminish plaque accumulation, gingival inflammation, and bleeding upon probing. These effects are likely due to their antimicrobial action and their ability to improve local oxygenation, creating an unfavorable environment for anaerobic bacteria [6]. Comparative studies show that ozonated oils may show outcomes comparable to chlorhexidine in reducing clinical indices, with the additional advantage of lower cytotoxicity and better tolerability [7,8]. This may support their use in long-term oral care. Moreover, ozonated oils have been associated with enhanced wound healing, possibly due to improved microcirculation, modulation of oxidative stress, and stimulation of immune responses. These effects may be particularly relevant in patients with compromised healing capacity [9]. Despite promising findings, current evidence is heterogeneous in terms of study design, formulation, and treatment protocols. Further well-designed clinical trials are needed to establish standardized guidelines and confirm long-term efficacy and safety [10].

Conclusion

Mouthwashes based on ozonated oils represent a promising adjunct in oral healthcare, combining antimicrobial and regenerative properties. Further research is required to define their role in routine dental practice.

Keywords: Efficacy; Mouthwash; Ozonated oil; Ozon-based therapy.

Conflict of interests

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REFERENCES

1. AlMogbel AA, Albarrak MI, AlNumair SF. Ozone therapy in the management and prevention of caries. *Cureus*. 2023;15(4):e37510. doi: 10.7759/cureus.37510.
2. Huth KC, Quirling M, Lenzke S, Paschos E, Kamereck K, Brand K, et al. Effectiveness of ozone against periodontal pathogenic microorganisms. *Eur J Oral Sci*. 2011;119(3):204-210. doi: 10.1111/j.1600-0722.2011.00825.x.
3. Ugazio E, Tullio V, Binello A, Tagliapietra S, Dosio F. Ozonated oils as antimicrobial systems in topical applications. Their characterization, current applications, and advances in improved delivery techniques. *Molecules*. 2020;25(2):334. doi: 10.3390/molecules25020334.
4. Travagli V, Zanardi I, Valacchi G, Bocci V. Ozone and ozonated oils in skin diseases: a review. *Mediators Inflamm*. 2010;2010:610418. doi: 10.1155/2010/610418.
5. Suh Y, Patel S, Kaitlyn R, Gandhi J, Joshi G, Smith NL, et al. Clinical utility of ozone therapy in dental and oral medicine. *Med Gas Res*. 2019;9(3):163-167. doi: 10.4103/2045-9912.266997.
6. Nardi GM, Fais S, Casu C, Mazur M, Di Giorgio R, Grassi R, et al. Mouthwash based on ozonated olive oil in caries prevention: A preliminary in-vitro study. *Int J Environ Res Public Health*. 2020;17(23):9106. doi: 10.3390/ijerph17239106.
7. Nambiar S, Malothu S, Karmakar S, Varkey A, Chandra D, Chava VK. Comparison of ozonated olive oil and chlorhexidine gel as an adjunct to nonsurgical periodontal therapy for the treatment of chronic periodontitis: A randomized controlled clinical trial. *J Pharm Bioallied Sci*. 2022;14(Suppl 1):S94-S98. doi: 10.4103/jpbs.jpbs_565_21.
8. Clavo B, Rodríguez-Esparragón F, Rodríguez-Abreu D, Martínez-Sánchez G, Llontop P, Aguiar-Bujanda D, et al. Modulation of oxidative stress by ozone therapy in the prevention and treatment of chemotherapy-induced toxicity: Review and prospects. *Antioxidants (Basel)*. 2019;8(12):588. doi: 10.3390/antiox8120588.
9. Jose J, Teja KV, Ranjan M, Mohamed RN, Alam MK, Shrivastava D, et al. Influence of commonly used endodontic irrigants on the setting time and metal momposition of various base endodontic sealers. *Polymers (Basel)*. 2021;14(1):27. doi: 10.3390/polym14010027.
10. Pietrocola G, Ceci M, Preda F, Poggio C, Colombo M. Evaluation of the antibacterial activity of a new ozonized olive oil against oral and periodontal pathogens. *J Clin Exp Dent*. 2018;10(11):e1103-e1108. doi: 10.4317/jced.5492.