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Efficacy of Probiotics in the Prevention and Treatment of Peri-Implant Diseases: A Systematic Review

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ABSTRACT

Introduction: Peri-implant diseases especially peri-implantitis pose major issues in dental implantology because of inflammation and bone resorption around the dental implants. Probiotics have been identified as a possible secondary intervention to manage the composition of peri-implant biofilm and improve the immune system. This systematic review presents a comprehensive analysis of the effectiveness of probiotics in the treatment of peri-implant diseases.

Search Strategy:: The PubMed, Cochrane Library, and Embase databases were searched for articles up to 2024. The search included randomized controlled trials, pilot studies, narrative reviews, and meta-analyses that evaluated the effects of probiotics on diseases related to implants. Outcome measures assessed included signs of inflammation and infection, changes in bleeding on probing, plaque index, probing pocket depth, microbiological samples, and inflammatory biomarkers.

Results: The systematic review presented in this study illustrated a rather complex picture of efficacy of probiotics in addressing peri-implant disease. In terms of clinical parameters, some published studies demonstrated positive effects of probiotics, while others reported only modest or even negative results. The statistical significance of the findings varied across the studies, and the results of the meta-analysis were somewhat contradictory. This systematic review indicated a potential for the use of probiotics in managing peri-implant diseases, although the outcomes remainrd inconclusive. The results of individual studies were mixed, primarily due to variations in study designs, probiotic strains, dosages, and treatment durations. Some research supported the beneficial impact of probiotics on inflammation and clinical indicators, while others revealed negligible or adverse outcomes. The meta-analysis highlighted these contradictions and emphasized the need for more rigorous and standardized research to clarify the role and efficacy of probiotics in the treatment of peri-implant disease.

Conclusion and Discussion: The meta-analysis of the evidence presented reveals the multifaceted nature of probiotics' use in the context of peri-implant disease and highlights the need for further studies to determine the effectiveness of this approach and to develop comprehensive guidelines. Thus, it is essential to address the existing gaps in knowledge, including the selection of probiotic strains, their dosages, and the duration of treatment courses.

Keywords: Biofilms, Bone resorption, Dental implants, Inflammation, Probiotics