INPLASY

Efficacy of probiotics as a therapeutic agent in periodontal therapy: Systematic Review

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ADMINISTRATIVE INFORMATION

Support - Null.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 March 2025 and was last updated on 17 March 2025.

INTRODUCTION

Review question / Objective To compare, through a systematic review, the effectiveness of probiotics as a therapeutic agent in periodontal therapy.

Rationale The incorporation of probiotics in periodontal treatment could offer a complementary approach that is not only more accessible and less invasive but also less susceptible to the development of antibiotic resistance, which represents a significant advantage given the increasing use of antibiotics in periodontics. Furthermore, they may be a particularly attractive therapeutic option for patients with contraindications or allergies to antibiotics. Given the growing popularity of probiotics as a complementary treatment in dental and periodontal care, and the uncertainty that persists regarding their true efficacy, this study is justified as a tool to evaluate the available scientific evidence. This review will establish whether probiotics can be a viable and effective option in the treatment of periodontal disease, thus providing a solid foundation for future research and clinical practices.

Condition being studied Periodontal disease, along with caries, is one of the major conditions that compromise the oral health of the population. According to the WHO, it is characterized by the progressive destruction of periodontal tissue, expressed through clinical attachment loss, alveolar bone loss, the presence of periodontal pockets, and gingival bleeding. It is defined as an inflammatory, progressive, and destructive process associated with the subgingival presence of a diverse and numerous microbiota. The main common pathogens associated with periodontal disease are: Porphyromonas gingivalis, Prevotella intermedia, and Tannerella forsythia. Conventional treatment has focused on the elimination of oral biofilm and the prevention of periodontal inflammation, thereby reducing pathogenic bacteria. Scaling and root planing (SRP) is the effective gold standard for reducing bacterial load and eliminating plaque and calculus; however,

treated sites are subject to recolonization with a microbiota similar to therapy, pathogen colonization can occur rapidly after treatment, and lead to disease recurrence by reestablishing a pathogenic microbiota within months. Due to the limitations of SRP in the treatment of periodontitis, adjunctive therapies, including antibiotic, antimicrobial photodynamic, and probiotic therapies have been proposed.

METHODS

Search strategy Cochrane: ((((Periodontitis or Periodontal disease) and (Intervention or Therapy or Treatment)) or (Scaling root planning or non-surgical therapy or Periodontal treatment or Periodontal therapy)) and Probiotic).mp
Medline: (((Periodontitis OR Periodontal disease OR Periodont*) AND (Intervention OR Therapy OR Treatment)) OR (Scaling root planning OR SRP OR non-surgical periodontal therapy OR non-surgical therapy OR Periodontal treatment OR Periodontal therapy) AND (Probiotic OR Probiotic* OR Probiotic therapy OR Probiotic effect OR Probiotic treatment))
Embase : ((Periodontitis or Periodontal disease) and (Intervention or Therapy or Treatment) and Probiotic).mp.

Participant or population
– Patients with periodontitis.
– Patients who have more than one quadrant.
– Patients who will be free of any systemic disease.

Intervention Probiotics.

Comparator Antibiotics.

Study designs to be included Randomized clinical trials.

Eligibility criteria Exclusion criteria: Studies that do not present a control group without periodontal disease or that present systemic diseases, pregnant individuals, or those applied in animals and in vitro.

Information sources Review examined an electronic search in the databases of Cochrane, medline and embase.

Main outcome(s) 6 ECAS with a total of 227 patients (172 test group and 55 control group) were included. All therapies reduced bleeding on probing (BOP) during the evaluated study times, with better results observed at shorter evaluation times for the antibiotic group, as well as for clinical attachment level (CAL). For probing depth (PD) parameters, better results were obtained when probiotics and antibiotics were combined. Regarding the changes in plaque index (PI), there was no statistically significant difference when controls were performed in the short term compared to the long term after the administration of probiotics.

Quality assessment / Risk of bias analysis The recommendation of Higgins and Green was utilized, and the risk of bias of the included randomized controlled trials was assessed following the Cochrane manual for systematic review interventions Version 5.1.0.

Strategy of data synthesis Two independent reviewers (D.A and J.E) conducted a search strategy in various databases including Cochrane, PubMed, and Embase.

Subgroup analysis The collaborative bibliographic manager (Rayyan) was used to exclude duplicate records and evaluate titles, eliminate abstracts, exclude articles that do not present the study variables.

Sensitivity analysis Most of the studies evaluated have a low risk of bias according to Cochrane, the articles found are of high methodological quality and would be of good clinical utility.

Country(ies) involved Peru.

Keywords Periodontitis, periodontal disease, Scaling root planning, non-surgical therapy, probiotic.

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