

# INPLASY PROTOCOL

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**Conflicts of interest:**  
The authors declare no conflicts of interest.

## Uses of Anacardium occidentale in periodontics: A Systematic review

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**Review question / Objective:** What is the effect of Anacardium occidentale on periodontal disease?. **Population (P):** Studies of patients affected with periodontal disease, in vivo models of periodontitis, in vitro models that simulate microbiomes or pathogenic periodontal bacteria or biofilms of periodontopathogens and that use Anacardium occidentale for the treatment of periodontal disease or the inhibition of periodontopathogens; **Intervention(I):** Use of Anacardium occidentale in any of its presentations as an adjunct for the treatment of periodontal disease; **Comparison (C):** Use of placebo, control group or no intervention; **Outcome (O):** main outcome(s)-Inhibition of alveolar bone loss in mm2. -Antibacterial activity. -Reduction of inflammation. Additional outcome(S)-Decrease in the rate of bleeding.-Reduction of bacterial plaque.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 January 2021 and was last updated on 11 January 2021 (registration number INPLASY202110029).

### INTRODUCTION

**Review question / Objective:** What is the effect of Anacardium occidentale on periodontal disease?. **Population (P):** Studies of patients affected with periodontal disease, in vivo models of periodontitis, in vitro models that simulate microbiomes or pathogenic periodontal

bacteria or biofilms of periodontopathogens and that use Anacardium occidentale for the treatment of periodontal disease or the inhibition of periodontopathogens; **Intervention(I):** Use of Anacardium occidentale in any of its presentations as an adjunct for the treatment of periodontal disease; **Comparison (C):** Use of placebo, control

group or no intervention; Outcome (O): main outcome(s)-Inhibition of alveolar bone loss in mm<sup>2</sup>. -Antibacterial activity. -Reduction of inflammation. Additional outcome(S)-Decrease in the rate of bleeding.-Reduction of bacterial plaque.

**Rationale:** Determining the effectiveness of *Anacardium occidentale* as a therapeutic alternative for periodontal disease and demonstrating its properties on tissues, being a product of natural origin, would be of great help, due to its healing, bactericidal, fungicidal and antioxidant effects. Furthermore, its low cost and minimal adverse effects would also benefit the patient. Finally, as there are no systematic reviews on the use of *Anacardium occidentale* in periodontics, the results will allow us to reach new conclusions based on evidence about its probable benefit in the prevention and treatment of periodontal disease.

**Condition being studied:** Periodontitis is a chronic, inflammatory, infectious disease of multifactorial etiology, characterized by an organized polymicrobial synergy that affects the supporting tissues of the teeth. For the treatment of periodontitis, recent research highlights the use of plant-based antibacterial products, where its essential oils have effective antibacterial properties; considering *Anacardium occidentale* an important phytochemical.

## METHODS

**Search strategy:** A thorough digital bibliographic search will be carried out in different databases such as The Cochrane Library, MEDLINE, LILACS, EMBASE, Web of Science, Scopus, SCIELO. Gray literature from the OpenSigle, OpenGrey, PQDT database will be included in the search through Google Scholar, as well as a manual search in high impact periodontics journals according to ISI Thomson Reuters: Journal of Periodontology, Journal of Clinical Periodontology, Journal of Periodontal Research, Journal of periodontal and Implant Science, Journal of Dental Research and in journals of chemical and biological aspects of

macromolecules such as International Journal of Biological Macromolecules. The bibliographic references of the included articles will be considered as additional studies.

**Participant or population:** Studies of patients affected with periodontal disease, in vivo models of periodontitis, in vitro models that simulate microbiomes or pathogenic periodontal bacteria or biofilms of periodontopathogens and that use *Anacardium occidentale* for the treatment of periodontal disease or the inhibition of periodontopathogens.

**Intervention:** Use of *Anacardium occidentale* in any of its presentations as an adjunct for the treatment of periodontal disease.

**Comparator:** Use of placebo, control group or no intervention.

**Study designs to be included:** Randomized clinical trials, in vivo study in animal model, in vitro studies.

**Eligibility criteria:** Studies should report on the inhibition of bone resorption and the periodontal mechanism of action induced *Anacardium occidentale* randomized clinical trials, in vivo study in animal model, in vitro studies. Paper will be obtained prior to June 2020.

**Information sources:** Digital bibliographic search will be carried out in different databases such as The Cochrane Library, MEDLINE, LILACS, EMBASE, Web of Science, Scopus, SCIELO. Gray literature from the OpenSigle, OpenGrey, PQDT database will be included in the search through Google Scholar, as well as a manual search in high impact periodontics journals according to ISI Thomson Reuters: Journal of Periodontology, Journal of Clinical Periodontology, Journal of Periodontal Research, Journal of periodontal and Implant Science, Journal of Dental Research and in journals of chemical and biological aspects of macromolecules such as International Journal of Biological Macromolecules. The

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bibliographic references of the included articles will be considered as additional studies. The reviewers will resolve through discussion and a third reviewer will verify the extracted data in order to obtain all the important information.

**Main outcome(s):** -Inhibition of alveolar bone loss in mm<sup>2</sup>; -Antibacterial activity; -Reduction of inflammation.

**Additional outcome(s):** -Decrease in the rate of bleeding; -Reduction of bacterial plaque.

**Data management:** After reading the full text articles, the data extraction will be performed which will be recorded in Microsoft Excel by two independent researchers, discrepancies will be resolved with the participation of a third researcher through discussion.

**Quality assessment / Risk of bias analysis:** Two independent and calibrated investigators will use Guidelines for Reporting Pre-clinical In Vitro Studies "Modified CONSORT for in vitro studies; for animal studies at the Systematic Review Center for Experimentation with Laboratory Animals (SYRCLE), the Cochrane tool will be used to assess the risk of bias in clinical studies, the RoB of the included studies will be determined and the non-concordances on the RoB scores will be resolved by a third investigator.

**Strategy of data synthesis:** It will be done in duplicate and independently by two reviewers and if there is any dissimilarity, it will be resolved through debate and a third researcher will verify the data extracted in order to obtain all the important information. The data will be extracted: Reduction of alveolar bone loss in mm<sup>2</sup>, antibacterial activity, reduction of inflammation, reduction of the bleeding index and reduction of bacterial plaque. Other data named below will also be extracted: Authors, year, country of origin, derived from *Anacardium occidentale* used and from which part of the tree it was obtained, what was the percentage of use, which periodontopathogens were

evaluated to determine their antibacterial action, who was the control group, what adjuvant it was and what type of verification was obtained.

**Subgroup analysis:** All selected articles will be included in the statistical analysis; if the data allow it, analysis by subgroups will be carried out.

**Sensitivity analysis:** Will plan to conduct sensitivity analysis to check the stability for the outcome results by excluding low methodological quality studies.

**Language:** No language restrictions will be applied.

**Country(ies) involved:** Peru.

**Keywords:** Periodontal diseases, *Anacardium*, cashew, antibacterial, anti-inflammatory.

**Contributions of each author:**

Author 1 - Patricia Neira Berrospi - drafted the manuscript.

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