

# EVALUATION OF THE PHOTODYNAMIC EFFECT MEDIATED BY METHYLENE BLUE DELIVERED IN SURFACTANT MEDIUM USED AS AN ADJUVANT TREATMENT TO ENDODONTIC RETREATMENT IN THE ERADICATION OF MICRO-ORGANISMS FROM PREVIOUSLY FILLED ROOT CANALS: CLINICAL TEST, RANDOMIZED, CONTROLLED AND DOUBLE-BOUND

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Endodontic infection is defined as the invasion and multiplication of microorganisms in the dental pulp, being responsible for pulp and periapical pathologies that occur when there is microbial persistence in the root canal system. Among the currently known endodontic retreatment methods, manual and mechanized retreatment, associated or not, and the use of solvents and intracanal medications can be mentioned. As these techniques are similar, the level of failure in retreatment ends up being high. In this sense, antimicrobial photodynamic therapy (aPDT) serves as an adjuvant in endodontic retreatment. It is a non-invasive technique that uses a photosensitizer and a light source for the formation of reactive oxygen species that cause bacterial death. However, the main limitation of the technique is the formation of dimers that reduce the effectiveness of the therapy. On the other hand, sodium dodecyl sulfate (SDS) showed the ability to reduce this dimerization effect. Therefore, the objective of this study will be to evaluate the photodynamic effect of methylene blue delivered in SDS at 0.25% for the treatment of patients with chronic periapical periodontitis in order to eradicate persistent microorganisms in previously filled root canals. The methodology will cover a sample of 30 patients with unsatisfactory endodontic treatment with chronic periapical periodontitis. These patients will initially undergo mechanized endodontic retreatment. After that, they will undergo treatment with photodynamic therapy. Patients will be randomized and divided into 03 groups, as follows: 1) mechanized endodontic retreatment (REM) and aPDT with methylene blue (n=10); 2) REM and aPDT with methylene blue in 0.25% SDS (n=10) and 3) REM with placebo irradiation (n=10). Microbiological results will be evaluated by microbial counts before and after treatment and clinical findings by absence of symptoms and radiographic parameters. Data will be treated statistically for comparison between groups. As a primary outcome, a reduction in intracanal microbial load is expected. **Keywords:** Photodynamic effect, endodontic retreatment, methylene blue

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