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IS THERE AN IDEAL PARAMETER FOR PHOTODYNAMIC THERAPY IN ENDODONTICS?

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When associated with chemo-mechanical treatment Photodynamic Therapy (PDT) has become an efficient approach for microbial reduction in endodontic therapy. Many studies have shown, in vitro and in vivo, good results when PDT was used against Gram positive and Gram negative bacteria, yeast, virus and also over multi-drug resistant microorganism, but there is no consensus about the parameters of using it. The aim of this study is to clarify the role of the photossensitizer, light parameters and necessity or not to use an optical fiber in endodontic PDT. Two different photossensitizers, Methylene blue and Polyethyleneimine chlorin(e6) conjugate, were tested, in vitro, for microbial reduction in planctonic suspension and biofilm formation against Gram+, Gram-, yeast and multi-drug resistant bacteria. The photossensitizers were also evaluated through optical absorption spectroscopy in different solvents, irradiated by a diode laser coupled or non-coupled to a 300µm optical fiber comparing the production of reactive oxygen species. The results indicated that even with different characteristics both photosensitizers were efficient for microbial reduction over planctonic microorganism or biofilm. The vehicle of the photossensitizer and the use or not of an optical fiber may influence the photochemical reaction behavior. Therefore to design a clinical oriented study many parameters have to be carefully evaluated to guarantee the success of the therapy.