



International Research Journal of Diabetes and Metabolism
(DOI:10.28933/IRJDM)



PHOTODYNAMIC POTENTIAL OF XANTHENIC PHOTSENSITIZERS ABOUT A STANDARD STRAIN OF PSEUDOMONES AERUGINOSA

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ABSTRACT

Introduction: Microbial control has proven to be an increasingly difficult obstacle to be controlled, making it a constant research focus. Researchers seek new alternative methods guaranteeing treatment without the use of antimicrobials or associating them, since its use has been neglected, causing an increase in the resistance of microorganisms, making it even more difficult to choose a treatment. The microorganism under study was *Pseudomonas aeruginosa*, a gram-negative, highly virulent bacterium found in the community and in a hospital environment, with difficult control due to its high capacity for antibiotic resistance, favored by the incorrect use of antibiotic therapies. Photodynamic Therapy consists of the use of a dye associated with the irradiation of a light on the microorganism, promotes dye-light-bacteria interaction, so that it can be inhibited or have its capacity for proliferation reduced. **Objective:** This research aimed to present an alternative method to its treatment through the use of xanthene dyes and a photosensitizer in a way that would sensitize the bacteria. Plants of the Baixada Maranhense (*Punica granatum* and *Terminalia cattapa*) and an LED light source that was irradiated for 40 seconds. The combinations between dye, plant extracts and elimination were organized into 7 groups. **Results:** The two most successful groups had combinations with the dye Rosa-bengal and in the presence of light, their bactericidal potential was strengthened. In the group in which *Punica granatum* extract was used alone, there was bacterial proliferation in the absence of the light source; in its presence, the reduction of colonies was not aesthetically relevant. **Conclusion:** Photodynamic Therapy presents itself as a new resource, acting independently of antibiotic therapy, avoiding and, concomitantly, reducing bacterial resistance. Thus, it appears as a viable alternative in the treatment of patients with “diabetic foot”, considering its possible application with different types of photosensitizers or even in combination with traditional drugs, in addition to the use of several light sources with lengths of different waveforms for the treatment of infections in epithelium and mucous membranes.

Keywords: Photodynamic therapy; *Pseudomonas aeruginosa*; Diabetic foot; xanthenes.

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How to cite this article:

Marcos Antônio Cavalari de Souza, Fernanda Frizo Corradi, Caio Cardozo Jorge, Lucas Moreira Guerra, Thatiana Scalon, Danyelle Cristine Marini. PHOTODYNAMIC POTENTIAL OF XANTHENIC PHOTSENSITIZERS ABOUT A STANDARD STRAIN OF PSEUDOMONES AERUGINOSA. International Research Journal of Diabetes and Metabolism, 2021, 4:17

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