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## **EVALUATING THE IMPACT OF PHOTOBIO-MODULATION THERAPY ON *Pseudomonas aeruginosa*-INDUCED ACUTE INFECTIOUS PROCESS**

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Photobiomodulation therapy (PBM) has shown potential in enhancing cellular stimulation, promoting wound healing, and alleviating pain in healthcare settings. However, its effects on infectious processes remain underexplored. This study aimed to evaluate the impact of PBM on inflammation induced by *Pseudomonas aeruginosa* in a mouse model. The Ethical Committee on Animal Use at IPEN approved this study. After anesthetizing the mice, a suspension of *P. aeruginosa* was inoculated into their left paws to induce infection. Six-h post-inoculation, sixteen mice were divided into two groups: a control group (CG), which received no treatment, and a laser-treated group (LG). The LG received PBM with a red laser (wavelength 660 nm, power 50 mW) delivering a light dose of 3 J/cm<sup>2</sup> to the infected paw. Swelling was evaluated using standardized photographs of the paws taken at 0, 16, and 24 h post-treatment, and analyzed with ImageJ software. Data were analyzed using Student's t-test, with results considered statistically significant at  $p < 0.05$ . Results showed a significant reduction in edema in the LG at 16 h and 24 h compared to the initial measurements. At 16 h, the LG exhibited less swelling compared to the CG. By 24 h, edema sizes in both groups were similar. Under the conditions of this work, our findings suggest that PBM does not increase bacterial burden and may effectively reduce swelling in acute infectious process. Further research is warranted to validate its potential as a strategy for managing infectious inflammation.

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