

Photodynamic Inactivation of *Pseudomonas aeruginosa* by PHEMA Films Loaded with Rose Bengal: Potentiation Effect of Potassium Iodide

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Abstract: In recent years, the number of infections caused by antibiotic-resistant microorganisms has increased, leading to a great concern not only medically but also economically. Therefore, new ways of dealing with these pathogens are needed. One of these approaches is the antimicrobial photodynamic therapy (aPDT), which involves the generation of reactive oxygen species through the activation of a photosensitizer by the effect of light at an appropriate wavelength.

In this research, a series of polymeric materials consisting mainly of poly(2-hydroxyethyl methacrylate) (PHEMA) loaded with photosensitizer (¹O₂) Rose Bengal, chemistry compound which generates the singlet oxygen, have been synthesized and subsequently characterised by Thermogravimetric Analysis (TGA), Attenuated Total Reflectance Fourier Transform Infrared Spectroscopy (ATR-FTIR) and UV-vis Absorption Spectroscopy. The generation of singlet oxygen in polymeric materials was evaluated by monitoring the photooxidation reaction of DMA by UV-vis spectroscopy. Additionally, the inhibitory effect on *Pseudomonas aeruginosa* bacteria was observed at different irradiation periods with white light. The antimicrobial photodynamic effect was remarkably enhanced by adding potassium iodide.

References

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Funding: UJI grant ref. UJI-B2018-30