

T8-P3: MAPLE-deposited thin films of green-synthesized silver nanoparticles functionalized with ibuprofen for controlled drug delivery in superficial wound healing

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In this study, silver nanoparticles were synthesized via a green synthesis approach from *Arthrospira platensis* and subsequently functionalized with Ibuprofen to enhance their therapeutic potential. The resulting hybrid nanostructures were deposited as thin films onto cotton disks using the Matrix-Assisted Pulsed Laser Evaporation technique. This composite system was designed for applications in superficial wound healing, combining the antimicrobial properties of silver nanoparticles with the anti-inflammatory effects of Ibuprofen. Fourier transform infrared spectroscopy verified the presence of Ibuprofen, while UV-Visible spectroscopy was employed to monitor the Ibuprofen release profile over time, based on its characteristic absorbance. Scanning electron microscopy provided insight into the surface morphology and uniformity of the films, and X-ray diffraction confirmed the crystalline structure of the silver nanoparticles. Biological assessments demonstrated favorable performance in terms of biocompatibility and potential for accelerating wound repair. The results demonstrate that this nanostructured system is a promising candidate for advanced wound care applications with controlled drug release capability.

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