

Synthesis and characterization titanium dioxide nanocomposite by laser ablation for antimicrobial applications.

ABSTRACT

A composite nanoparticle containing Titanium Dioxide is synthesized by pulsed laser ablation. Oxide nanoparticles NPs have wide ranges of physical, chemical and biological properties. The main advantages In the present work, studying the characterization of colloid TiO₂ NPs were synthesis by PLAL and investigated the antibacterial activity of colloidal TiO₂ NPs compared to the antibacterial activity of synthesized composite nanoparticles was tested against four different pathogen bacteria two-gram negative (Escherichia coli (E. coli), Klebsiella pneumoniae (K. pneumoniae)), institute of bioscience UPM university kindly supplied these bacteria. The bacterial suspension was made and adjusted by comparison against 0.5Mc-Farland turbidity typical (5x10⁷cell ml⁻¹) tubes. It was further diluted to obtain a final of 5x10⁶cell ml⁻¹. All bacteria strains were culture in agar media. The media was inoculated by the 0.2ml/5ml with either the bacteria strains, then added 0.5ml of TiO₂ nanoparticles at concentration 200, 400,600ml⁻¹. The samples were incubated at 37°C. The bacterial growth was measured by optical density that absorbs strongly at 532nm wavelength. Conclusion that is the mean values of inhibition were calculated from triple evaluation in each assessment.

Keyword : Antibacterial; Nanoparticles; Titanium dioxide.