

Nanotechnology-Based Treatment of *Klebsiella pneumoniae* Infections

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Abstract : We present method of nanoparticle enhanced laser thermal ablation of *Klebsiella pneumoniae* infections, using gold nanoparticles combined with a specific growth factor and demonstrate its selective therapeutic efficacy. Ab (antibody solution) bound to GNPs (gold nanoparticles) was administered in vitro and determined the specific delivery of the nano-bioconjugate into the microorganism. The extent of necrosis was considerable following laser therapy, and at the same time, normal cells were not seriously affected. The selective photothermal ablation of the infected tissue was obtained after the selective accumulation of Ab bound to GNPs into bacteria following perfusion. These results may represent a major step in antibiotherapy treatment using nanolocalized thermal ablation by laser heating.

Keywords : gold nanoparticles, *Klebsiella pneumoniae*, nanoparticle functionalization, laser irradiation, antibody

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