Role of NDDS in Tuberculosis Management: An Emerging Paradigm

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Abstract: *Tuberculosis (TB) remains a significant global health challenge, necessitating innovative approaches for effective treatment. Conventional TB therapy encounters several limitations, including extended treatment duration, drug resistance, patient noncompliance, poor bioavailability, and suboptimal targeting. Advanced drug delivery strategies have emerged as a promising approach to address these challenges. They have the potential to enhance therapeutic outcomes and improve TB patient compliance by providing benefits such as multiple drug encapsulation, sustained release, targeted delivery, reduced dosing frequency, and minimal side effects. This review examines the current landscape of drug delivery strategies for effective TB management, specifically highlighting lipid nanoparticles, polymer nanoparticles, inorganic nanoparticles, emulsion-based systems, carbon nanotubes, graphene, and hydro gels as promising approaches. Furthermore, emerging therapeutic strategies like targeted therapy, long-acting therapeutics, extrapulmonary therapy, phototherapy, and immunotherapy are emphasized.*

Keywords: Drug delivery systems, Extensive drug-resistant tuberculosis, Multidrug-resistant tuberculosis, Nanoparticles, Therapeutics, Tuberculosis

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