Bioaerosols as a Pathway for Infectious Disease Transmission: Implications for Management and Modern Pharmaceutical Strategies

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Abstract

Bioaerosols play a crucuial role as a transmission route for infectious diseases, especially respiratory diseases. This study aims to explore the characteristics of bioaerosols, their impact on health, and modern pharmaceutical strategies in the management of bioaerosol-transmitted diseases. The methodology involves a literature review, analyzing various scientific sources such as articles and trusted journals. Bioaerosols consist of biological particles including viruses, bacteria, and fungi, are small enough to disperse through the air and infect susceptible individuals. In addition, advanced pharmaceutical technologies like nanoparticle-based inhalation therapies and inhalation vaccines can enhance treatment, such as COVID-19, influenza, tuberculosis, and lung infections. The therapeutic goals include increasing local drug delivery to the lungs, strengthening the immune response at the site of infection, and minimizing systemic side effects through targeted aerosol-based drug administration. In conclusion, a deeper understanding of bioaerosols and the application of pharmaceutical technologies can improve infectious disease prevention and treatment strategies. Further research is needed to optimize the use of bioaerosol-based inhalation therapy efficiently. Future studies are recommended to explore the long-term effects of bioaerosols and the potential of aerosol-based therapies

Keywords: : Bioaerosol, Inhalation Therapy, Nanoparticles, Modern Pharmaceutical Strategies