Drug Delivery Systems Targeted Against Infectious Diseases

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Abstract:

Infectious diseases are of utmost concern and threat to the entire world currently. They are caused primarily by bacterial, fungal, parasitic and viral infections. According to world health organization (WHO) millions of deaths may occur due to infectious diseases by 2050 which shows a growing need to develop appropriate drugs or drug delivery systems. With a view overcoming manifold infectious diseases, they are treated with an array of drugs which act on a few specific targets and accomplish some amelioration in disease symptoms. However, a few drugs show adverse effects such as gastrointestinal inflammation, non-targeted delivery and short systemic circulation etc. Nanotechnology based drug delivery systems are currently in use to overcome these challenges. The current study focuses on multifarious drug delivery systems such as polymeric nanomaterials, hydrogels, dendrimers etc which considerably enhance the efficacy of encapsulated therapeutics such as drugs or bioactive molecules. Drug resistance has been a major biological riddle in the treatment of infectious diseases. Dendrimers play a pivotal role in overcoming this issue. Control release mechanisms, reducing toxicity and averting reticuloendothelial systems are the vital characteristics offered by delivery systems against fungal, bacterial and viral infectious diseases. In addition, Surface functionalization with target moieties on nanoparticle surface enhances the localization of therapeutics in the target tissues and ameliorates. It also discusses pros and cons of multiple delivery systems. Eventually, it can be concluded that expertise from various subjects such as biochemistry, medicine becomes a holy grail in the treatment of infectious diseases.

Biography:

M. Obulesu is a Scientist in ATG Laboratories, Pune, India. He has 19 years of research and teaching experience. His research areas are multifarious which include food science, pathology of Neurodegenerative diseases such as Alzheimer's disease and designing polymer based Biomaterials (Design of hydrogels etc.). He did Alzheimer's disease research and developed an aluminium induced neurotoxicity rabbit model

Recent Publications:

1. Singh, B., Maharjan, S., Cho, K., Cui, L., et al., Chitosan-based Particulate Systems for the Delivery of Mucosal Vaccines Against Infectious Diseases. Int J Biol Macromol. 2018, 110, 54-64.

2. Mhlwatika, Z., and Aderibigbe, B.A. Application of Dendrimers for the Treatment of Infectious Diseases. Molecules, 2018, 23, 2205.