

Nanotechnology in Drug Delivery Systems

Quinn Martinez
PhD
University of Milan
Via Festa del Perdono, 7, 20122 Milano MI, Italy

Ashley Hernandez
PhD
National University of Singapore
21 Lower Kent Ridge Rd, Singapore 119077

Jordan Phillips
PhD
Karolinska Institute
171 77 Stockholm, Sweden

Abstract. This article explores the role of nanotechnology in enhancing drug delivery systems, focusing on its potential to improve the efficacy and safety of therapeutics. It discusses various nanocarriers such as liposomes, dendrimers, and nanoparticles, and their applications in targeted drug delivery. The article highlights recent advances in nanotechnology that enable precise control over drug release and biodistribution, reducing side effects and improving patient compliance. Challenges in developing and commercializing nanotechnology-based drug delivery systems are also discussed.

Keywords: Nanotechnology, Drug Delivery, Nanocarriers, Therapeutics, Biodistribution

Introduction

Nanotechnology has revolutionized the field of drug delivery, offering novel solutions to overcome the limitations of conventional therapeutic approaches. By utilizing nanoscale carriers, researchers can improve the delivery and efficacy of drugs, particularly in targeting specific tissues or cells. This article examines the various types of nanocarriers, including liposomes, dendrimers, and nanoparticles, that have been developed for drug delivery applications. It highlights the recent advancements in nanotechnology that enable precise control over drug release kinetics and biodistribution, ultimately reducing side effects and enhancing patient compliance. Despite these promising developments, challenges remain in the translation of nanotechnology-based drug delivery systems from lab to clinic, including regulatory hurdles and scalability issues. Continued research and innovation are essential to fully harness the potential of nanotechnology in improving therapeutic outcomes.

This is a preliminary version. To read the full version of the article, please purchase a subscription.

References

1. Viroliya, K., Hojjat, A., Pena, B., Bhatt, H., Mehta, N. N., Venkata, S. Y., ... & Palabindela, P. (2023). Sa1359 *HELICOBACTER PYLORI* ASSOCIATED GASTRO-INTESTINAL BLEEDING IN BARIATRIC SURGERY-NATIONWIDE SURREY. *Gastroenterology*, 164(6), S-373.