

Nanoparticulate Drug Delivery Systems

A summary of a series of lectures on nanoparticulate drug delivery systems for cancer therapy.

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Work in progress document.

Why are nanoparticles used in medicine?

Nanoparticles used for medicinal purposes are referred to as nanomedicines and these agents have multi-dimensional usage as diagnostic tools or vehicles used for the targeted delivery of selected therapeutic compounds(Sadeghi et al. 2020). Nanoparticles are defined as being between 1-100 nanometres (nm) in diameter and these particles have already been used in the delivery of drugs such as vaccines, nucleotides and recombinant proteins(Sadeghi et al. 2020). These nanoparticle dependent delivery strategies exhibit improvements in rate of absorption, reduction in elimination kinetics and controlled release(Sadeghi et al. 2020).

Traditional drug administration normally involves the oral and intravenous delivery of drug molecules. These drug particles travel in an unguided manner and this results in a systemic distribution throughout the body(Lu et al. 2021). It is instead desirable to have the drug molecules primarily be located at