

Advanced Drug Delivery

Types of drug compounds, chemical composition, origin, physico-chemical properties, bioactivity, function.

Various routes of administration, fate of the drug in the human body, ADME (absorption, distribution, metabolism and elimination/excretion).

The aim of advanced drug delivery. Drug stability, protection, increased solubility and bioavailability. Drug targeting and programmed release, reduction of side effects and frequency of administration.

Design and preparation of drug carrier systems: drug-conjugates, complex or association type carriers, organic and inorganic particulate carriers. Nanoparticles and porous bodies. Biodegradability and biocompatibility of drug delivery systems. Controlled release of drug molecules. Multiplied drug carriers. Pharmaceutical disperse systems.

Combination of therapy and diagnosis. Theranostic nanoparticles for sensing, imaging and curing.

In vitro models in pharmacokinetics. Application of molecular layer and cell layer models. Characterisation of partitioning and transport of drugs and drug delivery systems across biological barriers.

Safety issues of nanotechnology related to enhanced drug delivery.

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