

Course: Nanopharmaceuticals and biopharmaceuticals: physicochemical/pharmacokinetic

Duration: 24 hours

Teacher(s): SALMASO Stefano/ STEPENSKY David

Curriculum: Pharmaceutical Sciences

Description:

Introduction into pharmacokinetics and pharmacodynamics, PK and PD of small MW drugs.

Pharmacokinetics (PK) and pharmacodynamics (PD) terminology, Physiological basis for drug (small MW compound) distribution and elimination, Major PK parameters: clearance, volume of distribution, elimination half-life, Major properties of compartmental and physiologically-based PK (PBPK) models, PK-PD correlations (sigmoid E max model).

PK and PD of nano-drug delivery systems (DDSs). Targeted drug delivery for enhancement of drug effectiveness and safety, Major pathways of nano-DDS disposition following systemic administration. Effect of the nano-DDS formulation properties (size, charge, composition, targeting residues) on their systemic disposition and accumulation in solid tumors. Analytical issues: quantification of nano-DDS-encapsulated vs. free drug in the systemic circulation and at the site of action (solid tumor). Problems with limited drug/DDS permeability into the 'deep' parts of the solid tumor (i.e., cells that are distant from the capillaries). Modeling analysis of rate-limiting steps of nano-DDSs systemic and intratumoral disposition. Strategies to modulate the nano-DDSs disposition for enhancing their therapeutic effectiveness

(PK) and pharmacodynamic (PD) properties of biopharmaceuticals. Immunogenicity and PK/PD of biopharmaceuticals. Target-Mediated Disposition of biopharmaceuticals. PK and PK-PD modeling of biopharmaceuticals and its use in pre-clinical and clinical drug development.

Additional information: guest speaker will be Prof. STEPENSKY David (Ben-Gurion University of the Negev – Israel).