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Modes of topical and localized drug delivery of nanoparticle and microparticle based formulations

As the field of nanomedicine advances into multiple therapeutic areas, there is a concomitant need to develop novel strategies and methodologies for various modes of administration targeting different regions of the body. Local or topical modes of delivery to localize the drug action is an important aspect of treatments in dermatology, rheumatology, intranasally administered drugs, ocular drugs, drugs to localize in specific organs' solid tumors and spinally administered drugs, for example. Drug delivery strategies are currently being developed for the efficient delivery of sustained release nanoparticle and microparticles through topical or local delivery of therapeutic agents by the subcutaneous, transdermal, intra-articular, ocular, inhalation, sublingual and intrathecal routes. The talk will focus on the guidelines for developing suitable formulations and delivery systems for these various routes of drug administration. Self-assembling nanoparticle drug delivery, development of nanoparticle patches, microneedle delivery, dissolving microneedle methodologies, magneto-electric approaches, transdermal polymer patches, spun silver nanoparticles, nanoparticle eluting stents, and intrathecal delivery via polymeric nanocomposite hydrogels and development of intranasal formulations of nanoparticle based small molecule and macromolecule drugs will be the focus of the talk. Localized drug delivery to internal ocular structures and to brain tissue, as in targeting brain tumors will also be addressed. Formulation strategies to lengthen residence time and provide longer sustained release in nanoparticle based formulations will be discussed, as well as regulatory considerations in the development of clinically viable nanomedicine-based drug products and diagnostic agents.

Biography

Irach B Taraporewala is President of the Sitara Pharmaceutical Group. He is an Innovator-Serial Entrepreneur; Pharma Executive, Drug Delivery & Development Expert providing consultant services for product development and strategy, Regulatory Affairs. He is the former CEO and President at OHR Pharmaceutical; he developed AVR118, a peptide immunomodulatory drug parenteral and topical formulations for cancer cachexia and squalamine eye drop formulations for treating retinal diseases. He has worked on drug-device combination devices for ophthalmic and intranasal drug delivery and development of molecular diagnostic products as well.

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