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Nanoparticle and microparticle-based drug delivery of ophthalmic pharmaceuticals

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Nanoparticle and microparticle drug delivery is a highly attractive prospect for the development of future ophthalmic pharmaceutical products. For chronic ocular diseases such as glaucoma, where patient compliance with eye drop therapy is low, sustained release therapy via nanoparticle or microparticle drug delivery approaches is especially of promise. It also is a viable approach for treatments post ophthalmic surgical procedures. While the ocular anatomy provides for a number of physical barriers for drug molecule entry, penetration and release in therapeutically viable concentrations at the specific site within the eye where it is therapeutically required, newer approaches to nanoparticle and microparticle design and fabrication also allow for the targeting of the innermost structures of the eye such as the macula and retinal pigment epithelium through such delivery systems. The presentation will address the novel biopolymeric materials, fabrication techniques and therapeutic approaches currently being developed as advances in nanotechnology and microparticle technology for ophthalmic indications including cationic, amphoteric and non-ionic particle technologies and non-emulsion based fabrication techniques such as the use of hydrogel templates and 3D printing approaches to the generation of nanoparticles and microparticles for ophthalmic treatments. The regulatory technical challenges of developing such novel ophthalmic drug products and their solutions will also be addressed.

Biography

Irach B Taraporewala has over 30 years' experience in drug discovery/drug development R&D. He currently is a President of the Sitara Pharmaceutical Consulting Group. He has previously served as Founder, CEO, President and Chief Technology Officer and on the Board of Directors of OHR Pharmaceutical, Inc. an ophthalmology drug development company and as a Drug Development Consultant at PAREXEL Consulting. He has published papers in drug development and delivery in reputed journals and has lectured extensively. He has received his PhD in Medicinal Chemistry from the Philadelphia College of Pharmacy and Science and has been Principal Investigator on several NIH/DoD biomedical research grants.

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