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Application of emerging pharmaceutical technologies for complex therapeutic challenges for optimal preventive health care

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An important requirement of emergent therapeutics will be the development of pharmaceutical technologies suitable for sustained and preventive health care in remote and sub-optimal environmental conditions. Availability of sustained, stable and targeted delivery of pharmaceuticals for preventive health of major organ systems including gastrointestinal, hepato-renal, musculo-skeletal and immune function are essential for effective pharmacotherapeutics. Specifically, pharmaceutical demands may include multi-drug combinations for hormone replacement, radiation protection, immune enhancement and organ function restoration. Additionally, extended stability of pharmaceuticals dispensed must be also considered in future drug development. Emerging technologies that can deliver stable and multi-therapy pharmaceutical preparations and delivery systems include nanotechnology based drug delivery platforms, targeted-delivery systems in non-oral and non-parenteral formulation matrices. Synthetic nanomaterials designed with molecular precision offer defined structures, electronics, and chemistries to be efficient drug carriers with clear advantages over conventional materials of drug delivery matricies. Nano-carrier materials like the bottle brush polymers may be suitable for systemic delivery of drug cocktails while Superparamagnetic Iron Oxide Nanoparticles or (SPIONS) have great potential to serve as carriers for targeted drug delivery to a specific site. These and other emerging concepts of drug delivery and extended shelf-life technologies will be reviewed in light of their application to address health-care challenges of the future. Innovations in alternate treatments for sustained immune enhancement and infection control will be also discussed.

Biography

Lakshmi Putcha is the Chief Scientist and Technical Manager, Pharmacotherapeutics for NASA at the Johnson Space Center in Houston, Texas. Her research expertise is in the areas of space physiology and pharmacotherapeutics; pharmacodynamics and biopharmaceutics; and chronotherapeutics. She is also an appointed Adjunct Associate Professor of Pharmaceutics, College of Pharmacy, Univ. Oklahoma, Oklahoma City; Adjunct Associate Professor of Pharmaceutics, College of Pharmacy, University of Houston, Houston; Adjunct Associate Professor of Pharmacodynamics, College of Pharmacy, University of Florida, Gainesville, FL; and Adjunct Professor, Texas Southern University, Houston, TX. She received her Bachelor's degree from the University of Saugar, India, Master degrees from the University of Houston, Houston, Texas and the University of Raipur, India, and her PhD from the University of Houston, Houston, Texas.

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