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Multi-component orchestrated delivery modules for personalized healthcare using SLA 3D printing

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Therapeutic delivery has long been the crux of medical advancement due to its direct affiliation with the patient. However the technological pathway hasn't matched up with the growing demands of customizability and compliance. Unfortunately the present state of therapeutic prescription is at a standstill causing longer batch hours, huge stock piling, logistics cost, medication tracking and all this leading to enormous amounts of cost, man hours and compliance. Overarching all of the above is that the prescriptions are bulk manufactured with therapeutic amounts assigned based on averaged clinical data. Here, we report a first demonstration of customizable multi-modal delivery in tandem, 'The Synco-Orchestration Delivery Module (SODM)' using 3D printing. The objective of our work is to demonstrate SLA 3D printed SODMs to address personalized drug delivery. Furthermore, SODMs are designed with multiple compartments to demonstrate multiple API delivery simultaneously. SODMs address most of the drawbacks of traditional delivery systems by bridging the gap between formulation, delivery and design. Significant advantages of SODMs include personalized dosage regimen, reduced number of intakes, programmed release kinetics and on-the-fly printable therapeutics. SODM thus promises a way to completely digitalize personalized delivery in the near future.

Biography

Reno A L Leon completed his Post-doctoral studies at National University of Singapore and is currently studying CSO-Materials at Structo Pte. Ltd., Singapore. He has four years of industrial experience in Polymeric Materials for Novel Drug Delivery, Digital Dentistry and Micro-formulations. He has two patents and five peer reviewed publications to his credit. His research interests include "3D delivery systems, personalized healthcare solutions, 3D bio-printing and digital therapeutics".

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