

### 3D Printing Technology In Medicine- A Review

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#### ABSTRACT

The dissimilarity between every human body is an increasing global obstacle when treating patients from different backgrounds with varied metabolism. Dose adjustment is frequently based on empirical methods. Hence, the chance of undesirable effects to occur is high. Three-dimensional printing (3DP) is the next great step in drug delivery; it is a unique prototyping technology that can revolutionize the field of pharmacokinetics with its customizability and the ability to fabricate complex solid dosage forms with high accuracy and precision. 3DP technology relies on computer aided designs providing unparalleled flexibility and exceptional manufacturing capability of pharmaceutical drug products. 3DP is gaining increasing attention in pharmaceutical formulation development as an effective strategy to overcome some challenges of typical pharmaceutical unit operations. The traditional manufacturing unit operation involving milling, mixing, granulation and compression can result in disparate final products with respect to drug loading, release and stability and pharmaceutical dosage form stability. 3DP got its recognition after FDA approval of 3D-printed Levetiracetam (SPRITAM<sup>®</sup>) tablets. 3D printing applications include but not restricted to personalized drug dosing, complex drug release profiles, printing living tissue, precise dose of each drug. 3D printing is still in its rudimentary level and requires intense research to expand its horizon to replace current production methods. The imperative areas that demand enhancements include optimization of the process, selections of appropriate excipients, post treatment method, 3D printed products' performance and to broaden the application range in novel drug delivery systems. The multiple opportunities 3D printing presents for the health care industry are being unveiled.