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| Manufacturing of personalized tablets via two additive manufacturing techniques of Fused filament fabrication and Droplet deposition modeling |
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| **Background:** Additive manufacturing (AM) has the potential to revolutionize the way personalized medicine is fabricated. Fused filament fabrication (FFF) is an AM technique that enables manufacturing medicines with personalized doses and controllable release profiles. However, this technique demonstrates some challenges due to the filament requirement, leading to various material restrictions. Therefore, the formulation's mechanical, rheological, and thermal properties need to be considered to avoid squeezing, bending, or breaking the filament aside by the gears during the FFF process. The more recent AM technique, droplet deposition modeling (DDM), by requiring the feedstock in granulate form, with a potential rival to the conventional pharmaceutical techniques, e.g., FFF. In this study, the feasibility of applying DDM and FFF for the fabrication of personalized medicine was assessed and *In Vitro* assays were compared. Hydrochlorothiazide (HCTZ), a thiazide diuretic frequently prescribes as treatment of hypertension and edema was selected as a model drug. In addition, infill density was chosen as a variable processing parameter. Besides the formulation, the tablets' properties were examined using scanning electron microscopy, Fourier transform infrared Spectroscopy, and ultraviolet. It has been determined that the structure of tablets fabricated with FFF and DDM techniques and the same infill percentage were different, thus, the drug release profiles were varied. |
| **Methods:** Additive manufacturing, Fused filament fabrication, Droplet deposition modeling, Scanning electron microscopy, Fourier transform infrared Spectroscopy, and ultraviolet |
| **Results:** It has been determined that the structure of tablets fabricated with FFF and DDM techniques and the same infill percentage were different, thus, the drug release profiles were varied. |
| **Conclusions:** The results indicate that DDM, as a new AM technique; is comparable with conventional techniques, i.e., FFF, making it an interesting alternative for personalized medicine manufacturing purposes. |