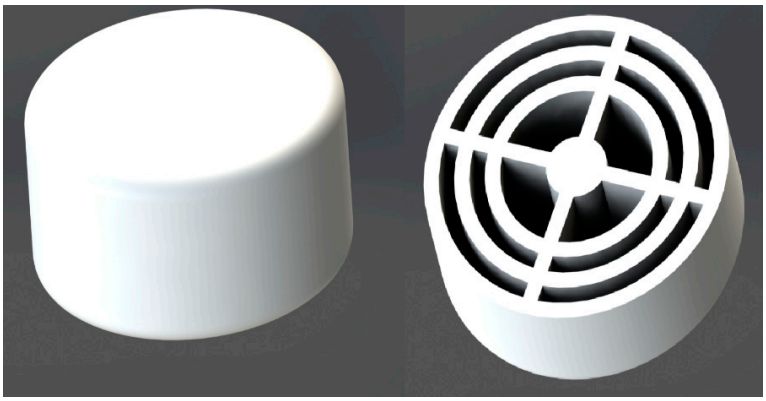

Figure S1. Exterior (left) and interior (right) layout of the pill shell designed by Solid works.

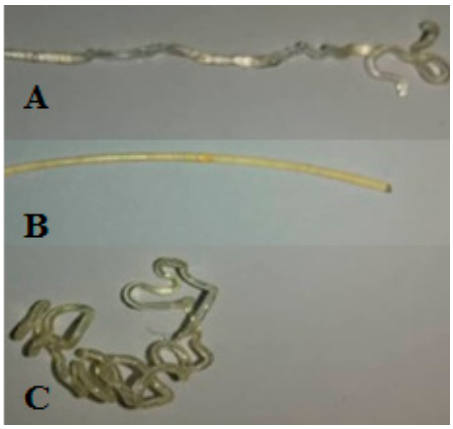

Figure S2. From top to bottom: A) brittle filament; B) extrudable and printable filament; C) extrudable but not printable filament.

Table S1. Different formulations of HPMC gel for printing by PAM

Formulations and amounts	HPMC polymer	Solvent volume (mL)	Extrudability	Printability
F1	10	200	×	×
F2	20	200	✓	✓
F3	30	200	✓	×

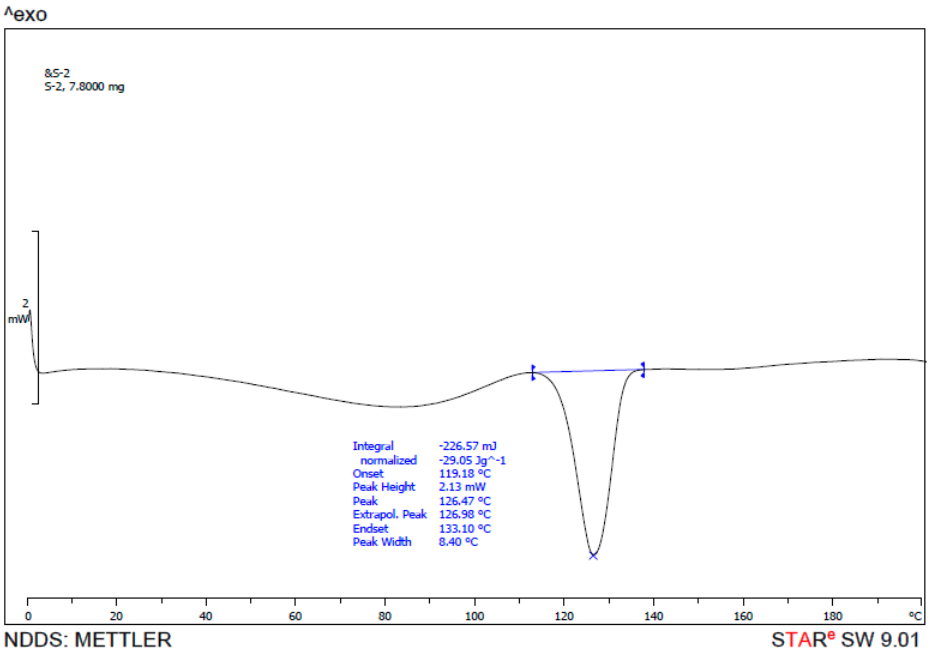

Figure S3. Diagram of DSC thermal analysis of Tacrolimus

Table S2. Assay determination of 3D printed tablet of Tacrolimus

	Assay		
	Area	Concentration (ug/ml)	% Assay
Injection1	227.00	19.82	99.10
Injection2	229.40	20.02	100.12
Injection3	223.00	19.48	97.40
Average	226.47	19.77	**98.87**
STD	3.23	0.28	1.38
RSD	1.43	1.39	1.39

Table S3. Content uniformity assay of 3D printed pills

Tablet no.	Area	concentration (ug/ml)	%
Tablet 1	223	19.39	97.0
Tablet 2	237	20.67	103.4
Tablet 3	230.7	20.14	100.7
Tablet 4	235	20.50	102.5
Tablet 5	226	19.73	98.7
Tablet 6	234	20.42	102a.1
Tablet 7	219	19.14	95.7
Tablet 8	213	18.63	93.1
Tablet 9	220	19.22	96.1
Tablet 10	241	21.01	105.1
Average(Ẍ)	227.8	19.89	99.4
STD	8.91	0.76	3.8
RSD (S)	3.91	3.82	3.8
T=Target		99	
Average(Ẍ)		99.4	
S		3.8	
Acceptance Value	KS	**9.12**	Limit <15

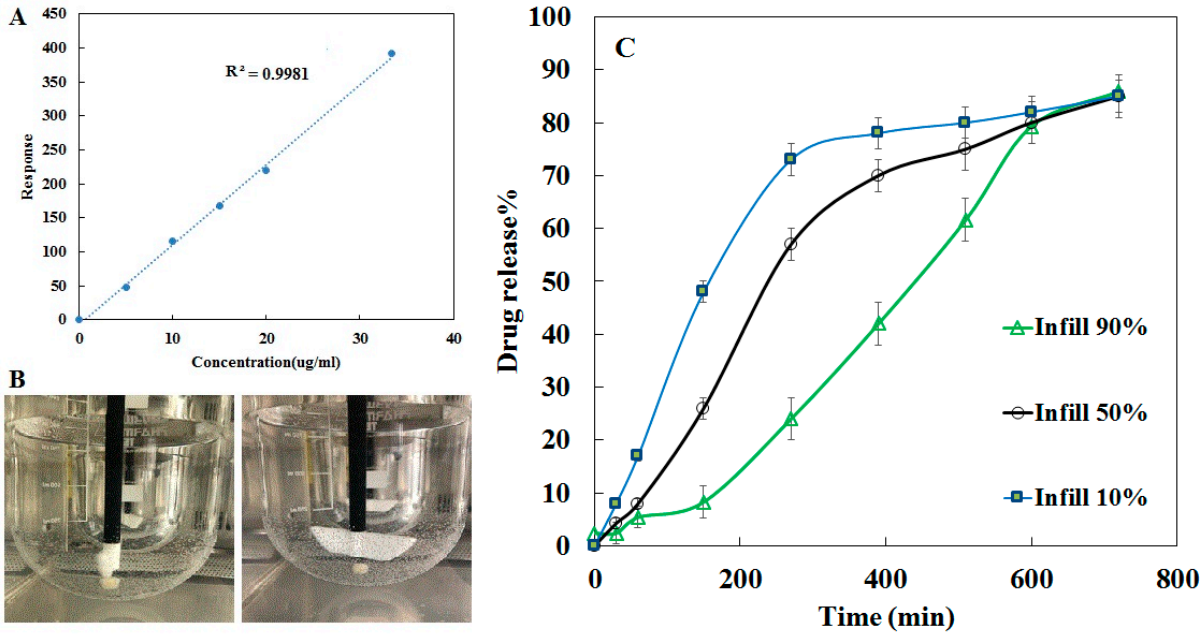

Figure S4. Calibration curve of tacrolimus standards for determination of dissolution samples (A). Photos taken from dissolutions 3D printed pill after 2h (Left side) and 8h (right side) (B). Dissolution profiles in the different infill % of the 3D printed tablet..

Table S4. Weight variation of 3D printed tablet of Tacrolimus**.**

Row	Weight (mg)
1	591
2	568
3	597
4	582
5	570
6	597
7	560
8	596
9	590
10	599
Mean	585
STD	14.20
RSD	**2.43**

Table S5. The results of tablet friability for 3D printed tablet of tacrolimus

Friability Test	
Row	Weight (mg)
Mean W0	589.8
Mean Wf	589.1
% Friability	**0.12**
%AV	1.00