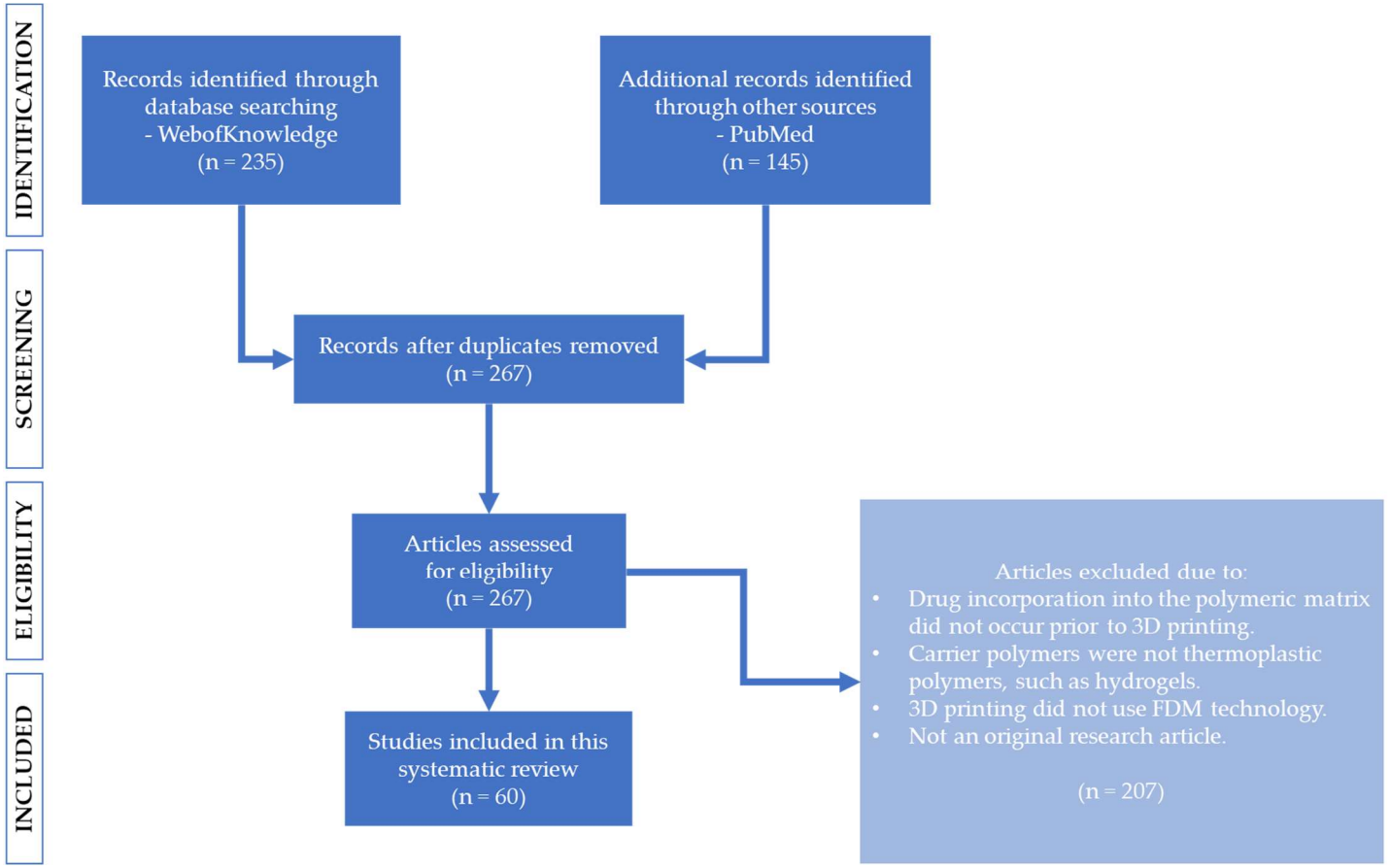

Figure S1. Flowchart diagram of the publications selection process conducted for this systematic review.

Table S1: Summary of the data gathered from publications considered in this systematic review.

Carrier polymer	Physical form	Loaded drug	Drug loading amount	Drug loading approach	Processing temperature	3D printer used	Intended application	Dosage form	Ref.
Polycaprolactone (Capa 6506) Kollidon VA64 Polyethylene oxide (Mw=300,000)	Powder	Lovastatin Hydrochlorothiazide	5% (w/w)	Stage 1: Sieved at 250 µm meshes Stage 2: Physically mixed for 15 minutes Stage 3: HME using a twin extruder Milled and sieved at 250 µm, mixed for 15 minutes Note: the process was repeated twice.	HME: 140°C 3D printing:160°C	MakerGear M2	Oral drug delivery	Tablets	[1]
Polyvinyl alcohol	Filament	Curcumin	5% (w/w)	Stage 1: N/A Stage 2: A saturated dispersion was prepared and, in some cases, heated Stage 3: The filament was soaked in this solution.	3D printing:210°C	Ninjabot FDM-200W	Oral drug delivery	Tablets	[2]
Polypropylene Polyvinyl alcohol	Filament	Ciprofloxacin HCl	3% (w/w) for PP 5% (w/w) for PVA	Stage 1: N/A Stage 2: A saturated solution was prepared and, in some cases, heated and stirred or sonicated. Stage 3: The filament was soaked in this solution for 12 or 24 hours.	3D printing:190°C (PP), 200°C (PVA)	MAKERBOT REPLICATOR 2X	Meshes, treatment of hernia	Implant	[3]

Polylactic acid (2002D) Polycaprolactone (MW: 80,000) Polyethylene glycol (4000)	Pellets, powder	Clonidine hydrochloride	1% (w/w)	Stage 1: N/A Stage 2: Drug and polymers were melt-mixed in a heated water bath Stage 3: A single screw extruder was used to produce a filament for 3D printing	HME: 190°C 3D printing: 190°C	Manli Technology Group CF-12410B	Orthodontic Retainer	Implant	[4]
Hydroxypropyl cellulose Polyvinylpyrrolidone	Powder	Itraconazole	20% (w/w) All formulations were loaded with efficiency of 100%	Stage 1: N/A Stage 2: Drug and polymers were physically blended in a bag for 5 minutes Stage 3: A single screw extruder was used to produce the filament for 3D printing	HME: 135°C 3D printing: 180°C	3D Magix MF-2200D	Oral drug delivery	Tablets	[5]
Eudragit EPO POLYOX™ WSR N10 POLYOX™ WSR N80	Powder	Pramipexole dihydrochloride monohydrate	1.3% (w/w) All formulations were loaded with efficiency of 96-101%	Stage 1: N/A Stage 2: Drug and polymer were mixed in mixer for 10 minutes. Stage 3: A single screw extruder was used to produce a filament for 3D printing	HME: 120-130°C 3D printing: 160-175°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[6]
Polylactic acid (Mw: 150,556)	Filament	Prednisolone Dexamethasone	0.25% (w/w) for prednisolone 0.09% (w/w) for dexamethasone	Stage 1: N/A Stage 2: A saturated solution was prepared. Stage 3: The filament was soaked in the solution for 24 hours at 37°C in an oscillator.	3D printing: 220°C	REGEMAT 3D V1	Tissue regeneration	Implant, Cylindrical scaffold	[7]

Polyvinyl alcohol	Filament	Metformin HCl	2% (w/w)	Stage 1: N/A Stage 2: A saturated solution was prepared. Stage 3: The filament was soaked in this solution for 3 to 4 days.	3D printing: 205°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[8]
Polyethylene oxides (Mw: 100K, 200K, 300K, 600K, 900K) Polyethylene glycol (Mw: 6K)	Powder	Theophylline	30% (w/w) All formulations were loaded with efficiency of 100%	Stage 1: N/A Stage 2: Drug and the polymer were melt-mixed in a twin screw extruder for 5 minutes. Stage 3: The mixed materials were extruded to produce filament for 3D printing	HME: 60-80°C 3D printing: 105-145°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[9]
Polyvinyl alcohol, Ultimaker filament	Filament	Ciprofloxacin hydrochloride	10%-35% (w/w)	Stage 1: The filament was crushed to produce pellets/particle ranging from 5000-250 µm Stage 2: Drug and polymer were physically mixed in a balloon and in some cases a Dibutyl Sebacate was used to improve adhesion. Stage 3: The mixture was extruded using a single screw extruder to produce filament for 3D printing.	HME: 160-175°C 3D printing: 195°C	Ultimaker 3	Oral drug delivery	Tablets	[10]

AFFINISOLTM HPMC HME 15lv CARBOWAXTM (PEG 8000) Polyethylene oxide (Mw: 100,000), PEO-L (Mw:2,000,000)	Powder	Theophylline	14%-35% (w/w) Drug loading efficacy was around 100%	Stage 1: N/A Stage 2: Drug and polymer were physically mixed. Stage 3: A twin screw extruder was used to produce filament for 3D printing	HME: 120-170°C 3D printing: 110-210°C	Ultimaker 3	Oral drug delivery	Tablets	[11]
Polycaprolactone (Capa 6506) Kollidon VA64 Polyethylene oxide (Mw: 300,000)	Powder	Caffeine	5% (w/w) Drug loading efficacy was around 100%	Stage 1: Polymer were sieved with a 450 µm mesh. Stage 2: Drug and polymer were mixed using a mixer for 15 minutes at 50 rpm. Stage 3: A twin extruder was used to produce a filament for 3D printing.	HME: 80-140°C 3D printing: 150°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[12]
Hydroxypropyl methylcellulose Affinisol HME 15LV Kollidon SR Eudragit E PO (EPO) hydroxypropyl cellulose	Powder	Carvedilol	20% (w/w)	Stage 1: N/A Stage 2: Drug and polymers were mixed in mortar and pestle. Stage 3: A twin extruder was used to produce filament for 3D printing	HME: 130 C 3D printing: 135-200 C	CraftBot Plus	Oral drug delivery	Tablets	[13]

Parteck MXP Sorbitol (Parteck SI 150),	Powder	Baclofen	10% (w/w)	Stage 1: N/A Stage 2: Drug and polymers were mixed using a mortar and pestle and then physically blended using a mixer. Stage 3: A twin screw extruder was used to produce filament for 3D printing	HME: 160°C 3D printing: 190°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[14]
Parteck MXP Sorbitol (Parteck SI 150) Hydroxypropyl cellulose (Klucel) Kollidon VA64 Affinisol™15LV	Powder	Metformin hydrochloride	5%, 10% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed using mortar and pestle and then physically blended using a mixer. Stage 3: A twin screw extruder was used to produce filament for 3D printing	HME: 140-170°C 3D printing: 200°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[15]
Hydroxypropylmethylcellulose (Benecel E5, K100M) Hydroxypropylcellulose (Klucel EF, HF) Polyethylene oxide (Sentry Polyox WSR N-80 NF, Sentry™ Polyox™ WSR N-750 NF) Eudragit® RS PO, RL PO and L 100	Powder	Isoniazid	30% (w/w) Drug loading efficiency was around 100%	Stage 1: N/A Stage 2: Drug and polymers were physically blended using a mixer. Stage 3: A twin screw extruder was used to produce filament for 3D printing	HME: 100-155°C 3D printing: 165-195°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[16]

Polyethylene glycol (Mw: 6000) Polyvinylpyrrolidone (k-value 12) Polycaprolactone (Mw: 14,000) Cellulose acetate phthalate (CAP) Eudragit L100-55 Hydroxypropyl methyl cellulose phthalate	Powder	Pantoprazole sodium	10% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed using mortar and pestle. Stage 3: Filament for 3D printing was producing using two methods: 1) A twin extruder was used and 2) a self-made piston extruder.	HME: 50-130°C 3D printing: 50-160°C	Multirap M420	Oral drug delivery	Tablets	[17]
Eudragit EPO	Powder	Hydrochlorothiazide Enalapril maleate	0%-50% (w/w) for hydrochlorothiazide 15% (w/w) for enalapril maleate	Stage 1: N/A Stage 2: Drug and polymer were mixed using mortar and pestle. Stage 3: A twin extruder was using to produce filament for 3D printing	HME: 100°C 3D printing: 135°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[18]
polylactic acid (2003D grade)	Pellets	Progesterone	2%, 5% and 10% (w/w) Drug loading efficiency was 70-90%	Stage 1: Before the second extrusion, filament was cut into pieces and grinded. Stage 2: In the first extrusion, drug and polymer pellets were physically mixed. Stage 3: A single screw extruder was used in the two extrusion steps to produce filament for 3D printing.	HME: 160°C 3D printing: 200°C	UP Mini 3D printer	Veterinary applications	Projectile contains contraceptive progesterone	[19]

PVA (Mowiol 4–88) Eudragit RL PO PLA (Resomer L 210 S) PEG 400	Powder	Metformin HCl Glimepiride	50% (w/w) for metformin 2% (w/w) for glimepiride	Glimepiride-loaded PVA Stage 1: Polymer was sieved and grinded Stage 2: Drug and polymer were mixed using mortar and pestle. Stage 3: A twin extruder was used to produce filament for 3D printing. Metformin-loaded Eudragit: Stage 1: N/A Stage 2: Melt mixing during extrusion. Stage 3: A two-step extrusion process was used. First, using a single screw extruder and then using a twin screw extruder to produce filament for 3D printing.	HME: 160-190°C 3D printing: 170-205°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[20]
Kollidon VA64, 12PF PEG 1500	Powder	Ramipril	3% (w/w) Drug loading efficiency was around 100%	Stage 1: N/A Stage 2: Drug and polymer were mixed using mortar and pestle. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 70°C 3D printing: 90°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[21]

Eudragit EPO	Powder	Warfarin	1% (w/w) Drug loading efficiency was around 90-100%	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed in the extruder for 5 minutes before extrusion. Stage 3: A twin screw extruder were used for producing a filament for 3D printing.	HME: 90-100°C 3D printing: 135°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[22]
Polyethylene glycol (Mw: 6000, 20000) Poloxamer 407 Polyvinylpyrrolidone (k-value 12) Kollidon VA64 Kollicoat IR Kollidon CL	Powder	Pantoprazole sodium sesquihydrate	5%-30% (w/w) Drug loading efficiency was around 90-100%	Stage 1: N/A Stage 2: Drug and polymer were mixed using mortar and pestle for 3 minutes. Stage 3: The mixture was extruded using a self-constructed piston extruder	HME: 41-145°C 3D printing: 45-87°C	Multirap M420	Oral drug delivery	Tablets	[23]
Gohsenol EG-05P PLA	Powder	Fluorescein	Not mentioned	Stage 1: N/A Stage 2: N/A Stage 3: A twin extruder was used to produce filament for 3D printing	HME: 90-210°C 3D printing:190°C	Ultimaker 3	Oral drug delivery	Tablets	[24]

Polylactic acid (2002D) Polycaprolactone (Mw: 80,000) Polyethylene glycol 4000	Powder, pellets	Progesterone	5% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed and then cut into pieces for extrusion. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 190°C 3D printing:195°C	CF-12410B, Manli Technology Group	Intrauterine system	Vaginal rings	[25]
Polyethylene glycol Hypromellose acetate succinate	Powder	Indomethacin	20% (w/w) weight and content uniformity variation of 5–10%	Stage 1: N/A Stage 2: Drug and polymer were mixed using a mixer for 10 minutes at 100 rpm. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 40-140°C 3D printing:165°C	Airwolf3D HD2xR	Oral drug delivery	Tablets	[26]
Tecoflex™ (EG-72D, EG-80A) TecophilicTM (SP-60D-60, SP-93A-100, TG-2000)	Powder, pellets	Theophylline anhydrous Metformin hydrochloride	0%-60% (w/w)	Stage 1: N/A. Stage 2: Drug and polymer were mixed. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 100-180°C 3D printing: 120-180°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[27]

Eudragit E	Powder	Hydrochlorothiazide	12.5% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed using the extruder before extrusion for 5 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 90-100°C 3D printing: 135°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[28]
Eudragit VR RL PO Polyethylene glycol 4000	Powder	Anhydrous theophylline	30% (w/w) Drug loading efficiency was around 97-99%	Stage 1: Drug and polymer were sieved using a 355 µm mesh. Stage 2: Drug and polymer were mixed using a mixer for 20 minutes. Stage 3: A twin screw extruder was used to produce filament for 3D printing.	HME: 30-175°C 3D printing: 180°C	Prodim XXL Pro	Oral drug delivery	Tablets	[29]
Kollidon VA64 Kollicoat IR Affinisol 15cP Aqoat AS-MG	Powder	Haloperidol	10%, 20% (w/w) Drug loading efficiency was around 95-97%	Stage 1: N/A Stage 2: Drug and polymer were mixed using a mixer. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 150°C 3D printing: 210°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[30]

Benecel HPMC E5 Soluplus®	Powder	Paracetamol	1% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed in a mixer at 25 rpm for 30 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 160°C 3D printing: 200°C	Ultimaker 3	Oral drug delivery	Tablets	[31]
Poval 4–88	Powder	Aripiprazole	0.55 (mg/cm^2)	Stage 1: N/A Stage 2: Drug and polymer were mixed. Stage 3: A single screw extruder was used to produce filament for 3D printing	HME: 172°C 3D printing: 190°C	Zmorph 2.0S	Oral drug delivery	Orodispersible films	[32]
Mowiol 4-88 Polylactic acid	Powder	Carvedilol Hydrochlorothiazide Mannitol	6% (w/w)	Stage 1: Polymer was sieved and grinded using 850 µm mesh. Stage 2: Drug and polymer were mixed. Stage 3: A single screw extruder were used to produce filament for 3D printing.	HME: 170°C 3D printing: 200-220°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[33]
Hydroxypropylmethylcellulose acetate succinate HPMCAS LG HPMCAS MG HPMCAS HG (Aqoat)	Powder	Paracetamol	5%-50% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed using a mortar and pestle. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 80-110°C 3D printing: 180-190°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[34]

Polyvinyl alcohol (YiShengInc)	Filament	Glipizide	2.5%, 5% (w/w) Drug loading efficiency was around 88-96%	Stage 1: Filament was grinded until become in powder form. Stage 2: Drug and polymer were mixed using mortar and pestle. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 180°C 3D printing: 195°C	Clouovo Delta-MK2	Oral drug delivery	Tablets	[35]
Hydroxypropyl cellulose (Klucel TM)	Powder	Domperidone	1% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed using mortar and pestle. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 145-150°C 3D printing: 210°C	MakerBot Replicator 2X	Oral drug delivery	Tablets	[36]
Eudragit RS Poly(L-lactide) (Resomer L206S) Polycaprolactone (Mw: 14,000) Ethyl cellulose (ETHOCEL Standard 45 Premium)	Powder	Quinine	5% (w/w)	Stage 1: N/A Stage 2: Drug and Polymer was mixed using solvent casting. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 47-140°C 3D printing: 53-164°C	Multirap M420	Drug delivery system	Implant (hollow cylinder)	[37]
Benecel HPMC E5 Klucel HPC EF, LF Aqualon EC N14 Soluplus Eudragit1 L100	Powder	Paracetamol	30% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed in a mixer for 20 minutes at 25 rpm. Stage 3: A twin screw extruder was used to produce filament for 3D printing.	HME: 140-160°C 3D printing: 200°C	Prusa i3	Oral drug delivery	Tablets	[38]

PVA (Nippon Syntheti)	Filament	Curcumin	1.75 (mg/g) in the filament	Stage 1: N/A Stage 2: A saturated solution was prepared. Stage 3: The filament was soaked in the solution over night at room temperature.	3D printing: 150-250°C	Ninjabot FDM-200W	Oral drug delivery	Tablets	[39]
Oleo-gum-resins from benzoin, myrrha, olibanum	Powder	Metal oxide nanoparticles (TiO_2, Cu_2O, and MoO_3)	10% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 70-85°C 3D printing: 80°C	Prusa i3	Bacterial infection prevention	Implant, disks	[40]
PVA (Makerbot Inc)	Filament	Paracetamol Caffeine	5%, 10% (w/w) Drug loading efficiency was around 82-86% and 94-95% for paracetamol and caffeine, respectively	Stage 1: Filament was cut into small pieces and grinded. Stage 2: Drug and polymer were mixed using mortar and pestle and a shaker-mixer. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 180°C 3D printing: 200°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[41]

Eudragit EPO	Powder	Theophylline 5-ASA Captopril Prednisolone	12.5% (w/w) Drug loading efficiency was around 88-96%	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed using the extruder before extrusion for 5 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 90-100°C 3D printing: 135°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[42]
Polyethylene glycol (Mw: 4000) Polyethylene Oxide (POLYOX WSR N10 LEO) Eudragit EPO	Powder	Felodipine	10% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed using mortar and pestle for 2 minutes. Stage 3: A twin screw extruder was used to produce filament for 3D printing.	HME: 100-130°C 3D printing: 150°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[43]
Polyvinylpyrrolidone (Mw: 40,000)	Powder	Theophylline Dipyridamole	10% (w/w) Drug loading efficiency was around 100%	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed using the extruder before extrusion for 5 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 90-100°C 3D printing: 110°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[44]

PCL (CAPA 6500)	Filament	Indomethacin	5%, 15%, 30% (w/w) Drug loading efficiency was 73-90%	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed using the extruder before extrusion for 10 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 100°C 3D printing: 100°C	MakerBot Replicator 2X	Intrauterine system	T-shaped	[45]
EVA copolymer (ATEVA 1070, 1075A, 1081G, 1241, 1641, 1821A, 1850A, 1880A, 2821A, 3325A) PCL (CAPA™ 6500)	Filament	Indomethacin	5%, 15% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed using the extruder before extrusion for 10 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 105-120°C 3D printing: 100-215°C	MakerBot Replicator 2X	Intrauterine system	T-shaped, subcutaneous rods	[46]
Flex EcoPLA BLUE 45D Polycaprolactone (Mw: 80,000)	Filament	Salicylic acid	2% (w/w) Drug loading efficiency was around 67%	Stage 1: N/A Stage 2: Drug and Polymer was mixed using solvent casting. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 60-190°C 3D printing: 170-230°C	MakerBot Replicator 2X	Nose shape, anti-acne drug loaded device	Implant	[47]

Polyvinyl alcohol	Filament	Budesonide	2%, 5% (w/w) Drug loading efficiency was around 82%	Stage 1: Filament was cut into small pieces and grinded. Stage 2: Drug and polymer were mixed using mortar and pestle and a shaker-mixer. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 170°C 3D printing: 190°C	MakerBot Replicator 2X	Oral drug delivery	Tablets	[48]
Polyvinyl alcohol	Filament	Paracetamol	5% (w/w) Drug loading efficiency was around 79%	Stage 1: Filament was cut into small pieces and grinded. Stage 2: Drug and polymer were mixed using mortar and pestle and a shaker-mixer. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 180°C 3D printing: 180°C	MakerBot Replicator 2X	Oral drug delivery	Cube, pyramid, cylinder, sphere and torus	[49]
Eudragit RL100, RS100 Hydroxypropyl cellulose (SSL)	Powder	Theophylline	50% (w/w) Drug loading efficiency was around 91-95%	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed using the extruder before extrusion for 5 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 110-130°C 3D printing: 140-170°C	MakerBot Replicator 2X	Oral drug delivery	Tablets	[50]

Polyvinyl alcohol	Filament	Prednisolone	1.9% (w/w)	Stage 1: N/A Stage 2: A saturated solution was prepared. Stage 3: The filament was soaked in the solution for 24 hours at 30 C.	3D printing: 230°C	MakerBot Replicator 2X	Oral drug delivery	Tablets	[51]
polyvinyl alcohol	Filament	5-aminosalicylic acid 4-aminosalicylic acid	0.06% and 0.25% (w/w) for the 5-ASA and 4-ASA, respectively	Stage 1: N/A Stage 2: A dispersion of drug in a solvent was prepared. Stage 3: The filament was soaked in the solution for 24 hours under stirring.	3D printing: 210°C	MakerBot Replicator 2X	Oral drug delivery	Tablets	[52]
polyvinyl alcohol	Filament	Fluorescein	0.29% (w/w)	Stage 1: N/A Stage 2: A solution of drug in a solvent was prepared. Stage 3: The filament was soaked in the solution for 24 hours under stirring.	3D printing: 220°C	MakerBot Replicator 2X	Oral drug delivery	Tablets	[53]
PCL (Mw: 80,000)	Pellets	Gentamicin sulphate	5%, 15%, 25% (w/w)	Stage 1: N/A Stage 2: Materials were melt-mixed. Stage 3: A piston extruder was used to produce filament for 3D printing.	3D printing: 100°C	Stratasys 3D Modeler RP system	Bacterial infection prevention	Implant, 3-dimensional mesh with honeycomb-like pattern	[54]

PVA (PVA05, PVA18, Gohsenol EG 05P, EG 18P) Eudragit RL100, RS100	Powder	Allopurinol	1% (w/w) Drug loading efficiency was around 98-99%	Stage 1: materials were milled and sieved using 250 µm mesh after mixing. Stage 2: Drug and polymer were mixed using mortar and pestle. Stage 3: A twin screw extruder was used to produce filament for 3D printing.	HME: 175-200°C 3D printing: 200°C	KLONER3D 240TWIN	Oral drug delivery	Structure with different shapes	[55]
Ethyl cellulose Hydroxypropyl methylcellulose (K100-LV Premium)	Powder	Ibuprofen	16-20% (w/w)	Stage 1: N/A Stage 2: Drug and polymer were mixed. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 100-120°C 3D printing: 170-186°C	A3 JGAURORA	Oral drug delivery	Structure with different shapes	[56]
Polyvinylpyrrolidone (Mw: 40,000) PEG400	Powder	Theophylline Budesonide Diclofenac sodium	10%, 2.3%, 20% (w/w) Drug loading efficiency was around 85-99%	Stage 1: N/A Stage 2: Drug and polymer were melt-mixed using the extruder before extrusion for 5 minutes. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 100-135°C 3D printing: 110-185°C	MAKERBOT REPLICATOR 2X	Oral drug delivery	Tablets	[57]

Poloxamine 908 (Tetronic) Polycaprolactone (Mw: 50,000)	Powder	Dexamethasone	0.001%, 0.1% (w/w)	Stage 1: Polymer were grinded before use. Stage 2: Polymers were mixed in a turbula for 15 minutes. Drug and the mixer were melt-mixed Stage 3: The mixture was poured in a tube with a diameter of a filament and placed into and ice bath to solidify the mixture.	HME: 80°C 3D printing: 110°C	Printrbot Simple	Bone regeneration	Implant, Scaffold	[58]
Mowiol 4-88 Chitosan	Powder	Diclofenac sodium	8% (w/w) Drug loading efficiency was around 60-100%	Stage 1: N/A Stage 2: Drug and polymer were mixed. Stage 3: A single screw extruder was used to produce filament for 3D printing.	HME: 165-169°C 3D printing: 190-200°C	Makerbot Replicator 2X	Oral drug delivery	Films	[59]
Sorbitol Parteck MXP	Powder	Lisinopril dihydrate Indapamide Amlodipine besylate Rosuvastatin calcium	5%-20%, 10%-2.5%, 5%-1.25% and 20%-5% for Lisinopril dihydrate, Indapamide, Amlodipine besylate and Rosuvastatin calcium, respectively Drug loading efficiency was around 93-99%	Stage 1: N/A Stage 2: Drug and polymer were mixed for 5 minutes at 100 rpm. Stage 3: A twin extruder was used to produce filament for 3D printing.	HME: 100°C 3D printing: 210°C	Makerbot Replicator 2X	Oral drug delivery	Tablets	[60]

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