

Supplementary Information for

**Structure, physicochemical properties and pharmacokinetics of
resveratrol and piperine cocrystals**

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Table S1 The hydrogen bond parameters of RSV-Pip cocrystals

Crystal form	Interactions	H...A /Å	D...A /Å	∠D-H...A /°	Symmetry code
RSV-Pip co-1	O1-H1...O1S	1.82	2.658(4)	179	x, y-1, z
	O2-H2...O3S	1.88	2.603(4)	144	-x+1, -y+1, -z+1
	O3-H3...O2S	1.79	2.628(5)	176	-x+1, -y+1, -z+1
	O1S-H1SA...O3S	1.98	2.832(4)	165	x+1, y, z+1
	O1S-H1SB...O2	1.89	2.740(4)	165	x, y, z
	O3S-H3SA...O4	1.77	2.640(4)	174	x, -y+3/2, z-1/2
	O3S-H3SB...O4	1.89	2.751(4)	170	-x, y+1/2, -z+1/2
	O2S-H2SA...O7	1.95(2)	2.766(4)	167(4)	x, -y+3/2, z+1/2
	O2S-H2SB...O7	1.89(2)	2.724(4)	173(4)	-x+1, y-1/2, -z+1/2
RSV-Pip co-2	O1-H1...O1S	1.84	2.647(2)	165	x, y, z
	O2-H2'...O4	1.86	2.627(2)	156	x, y, z
	O3-H3...O7	2.07	2.758(2)	141	x, y+2, z
	O1S-H2S...O2	1.97(3)	2.788(2)	175(3)	-x+1/2, y-1/2, -z+1/2

	O1S-H1S...O4	1.87(3)	2.709(2)	175(3)	x, y-1, z
RSV-Pip co-3	O1-H1...O1S	1.82	2.627(2)	170	x, y+1, z
	O2-H2...O7	1.82	2.629(2)	168	x-1, y, z-1
	O3-H3...O4	1.93	2.643(2)	145	x, y-1, z
	O1S-H1SB...O2	1.87(3)	2.746(2)	178(3)	-x, y-1/2, -z+1/2
	O1S-H1SA...O7	1.88(3)	2.700(2)	159(3)	x-1, y, z-1
RSV-Pip co-4	O1-H1...O1S	1.80	2.637(2)	174	x, y+1, z
	O2-H2...O10	1.83	2.600(2)	152	x-1, y, z-1
	O3-H3...O4	1.96	2.719(2)	151	x, y, z
	O1S-H1SD...O2	1.95(3)	2.786(2)	177.4(14)	-x, y-1/2, -z+1/2
	O1S-H1SE...O10	1.75(3)	2.651(2)	174(3)	x-1, y, z-1

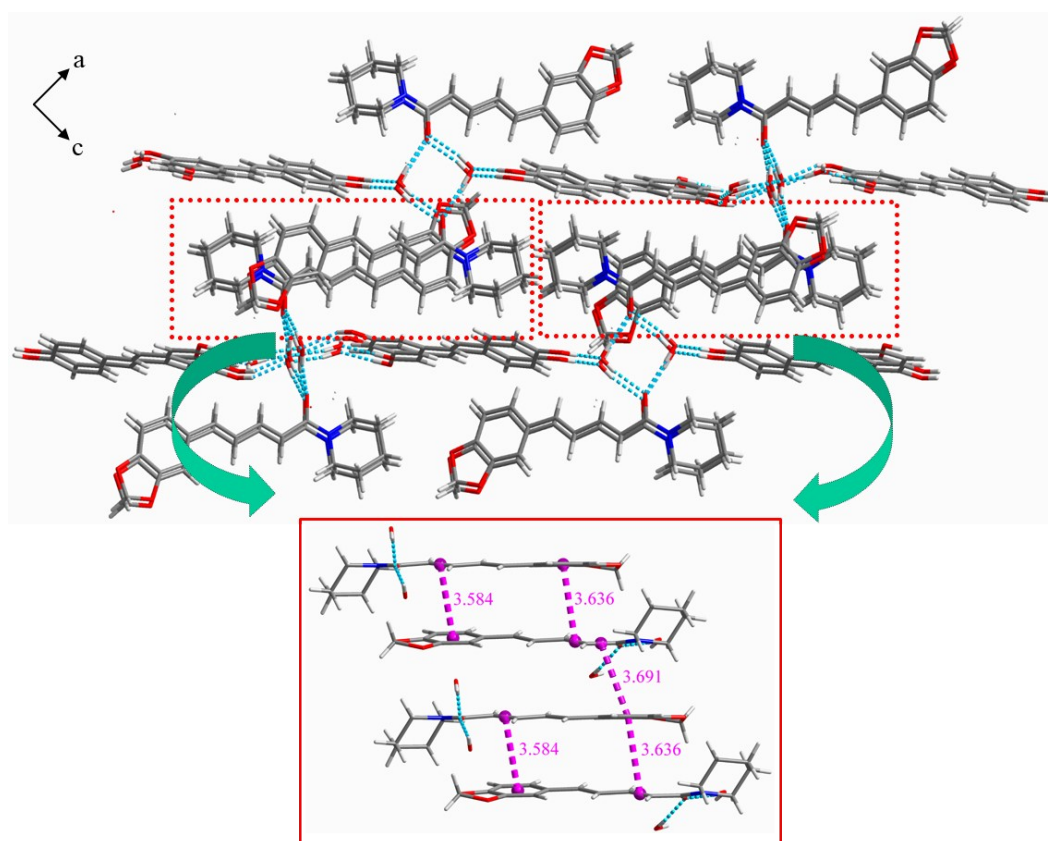


Figure S1. The 3D packing network of RSV-Pip co-1

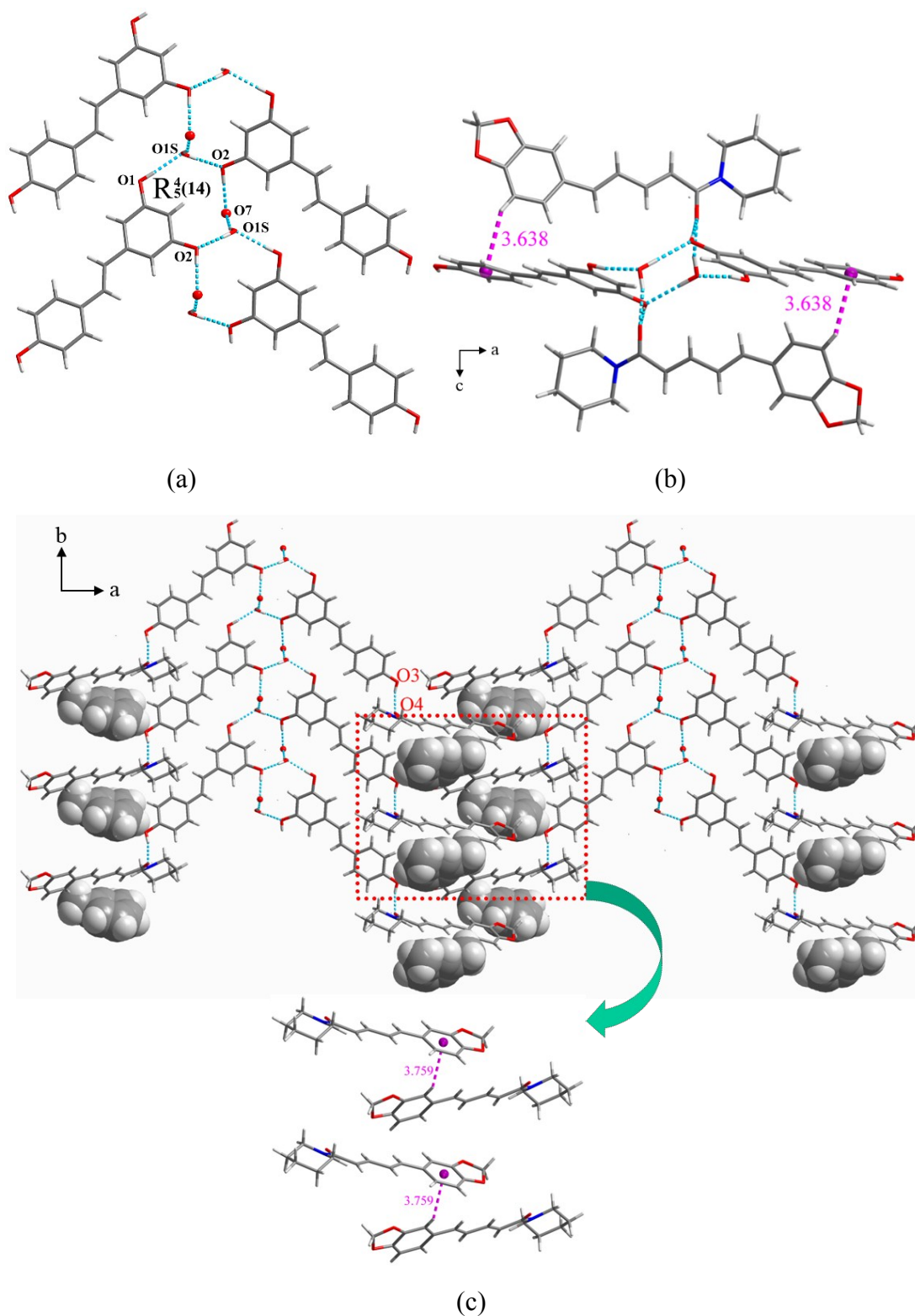


Figure S2. (a) The hydrogen bond interaction, (b) C-H... π interaction between RSV and Pip molecules, and (c) C-H... π interaction between Pip molecules in the 2D packing network of RSV-Pip co-3 (For clarity, Pip molecules were simplified as oxygens in (a) and (c))

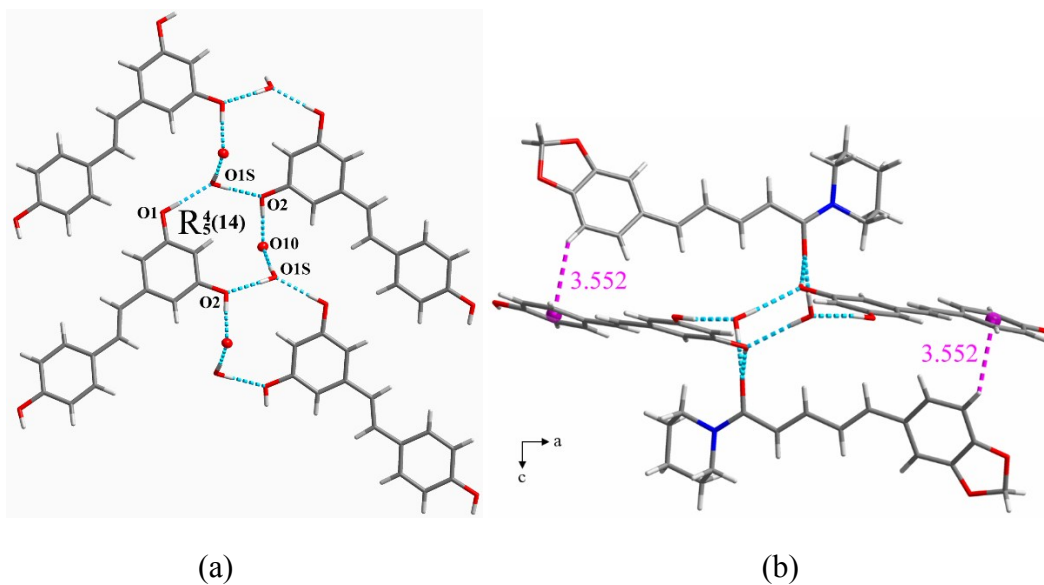


Figure S3. (a) the hydrogen bond interaction and (b) C-H... π interaction between RSV and Pip molecules in RSV-Pip co-4 (For clarity, Pip molecules were simplified as oxygens in (a))

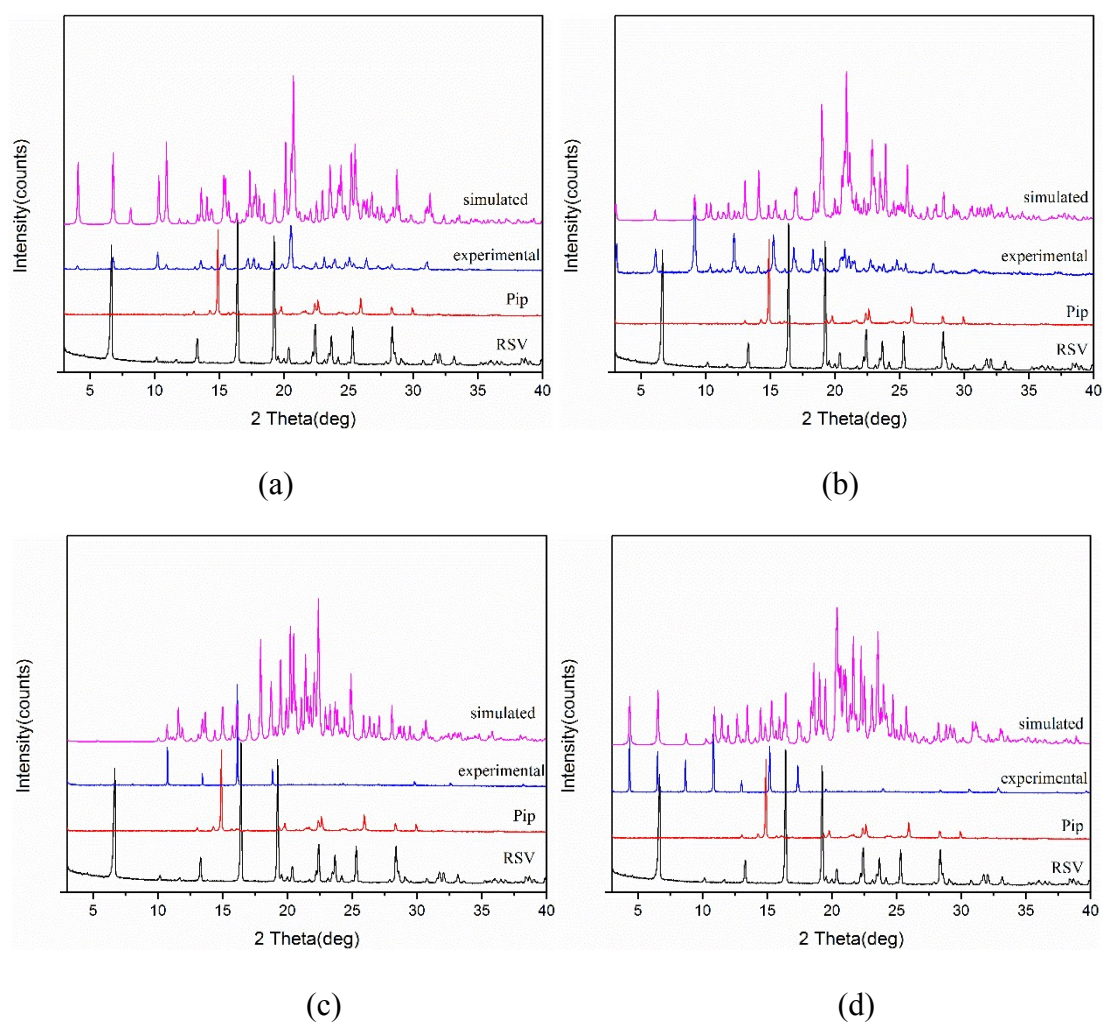


Figure S4. Comparison between the experimental and simulated PXRD of (a) RSV-Pip co-1 (b) RSV-Pip co-2 (c) RSV-Pip co-3 and (d) RSV-Pip co-4

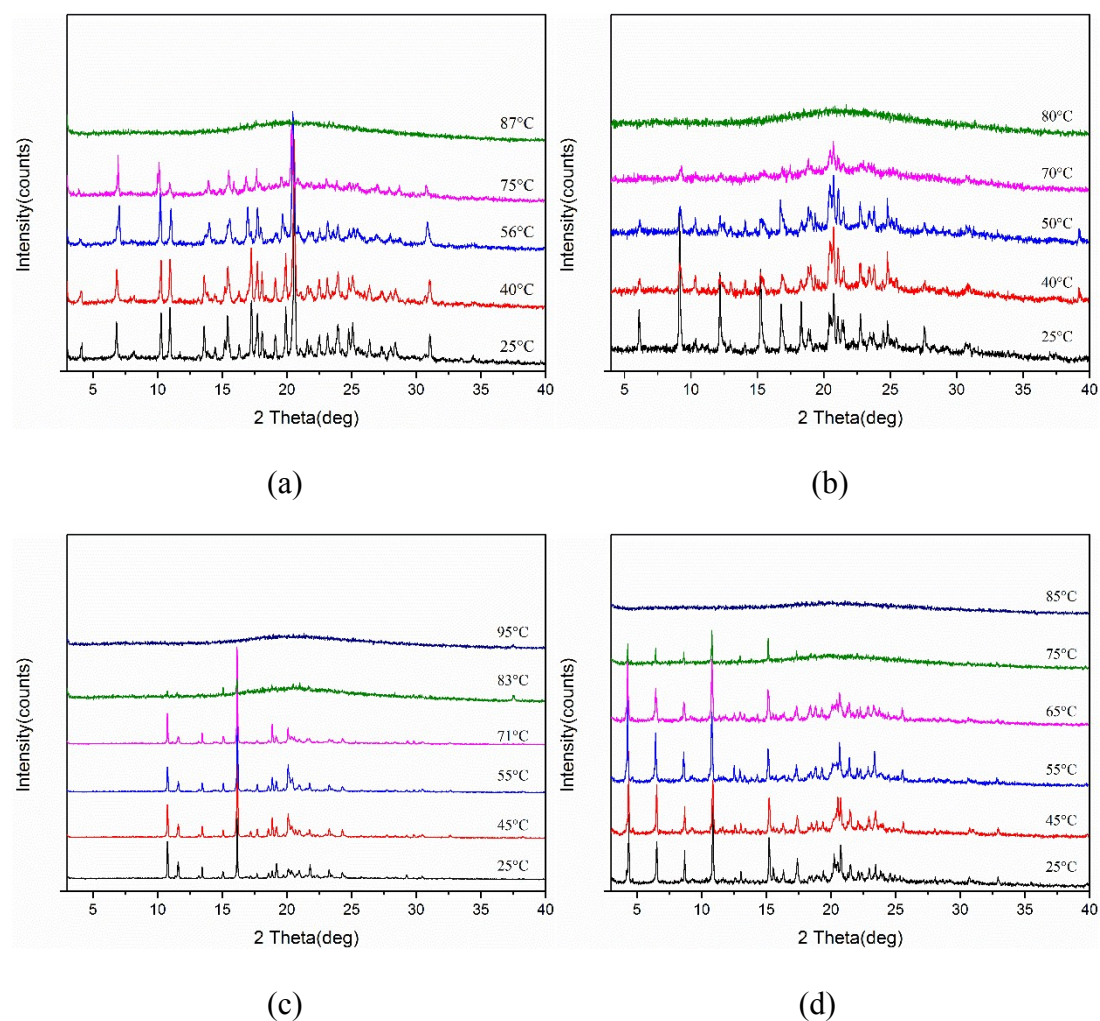
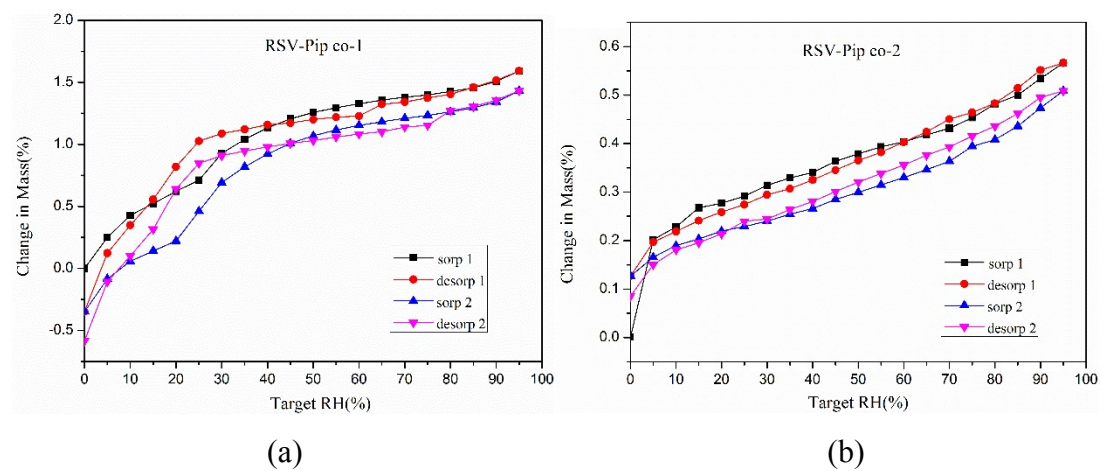


Figure S5. The VT-PXRD patterns of (a) RSV-Pip co-1 (b) RSV-Pip co-2 (c) RSV-Pip co-3 and (d) RSV-Pip co-4



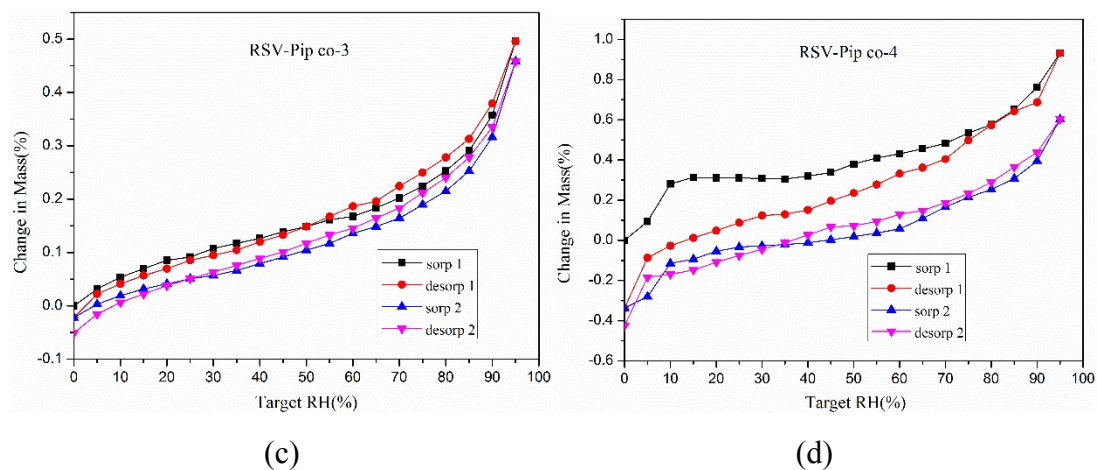


Figure S6. The DVS profiles for (a) RSV-Pip co-1 (b) RSV-Pip co-2 (c) RSV-Pip co-3 and (d) RSV-Pip co-4

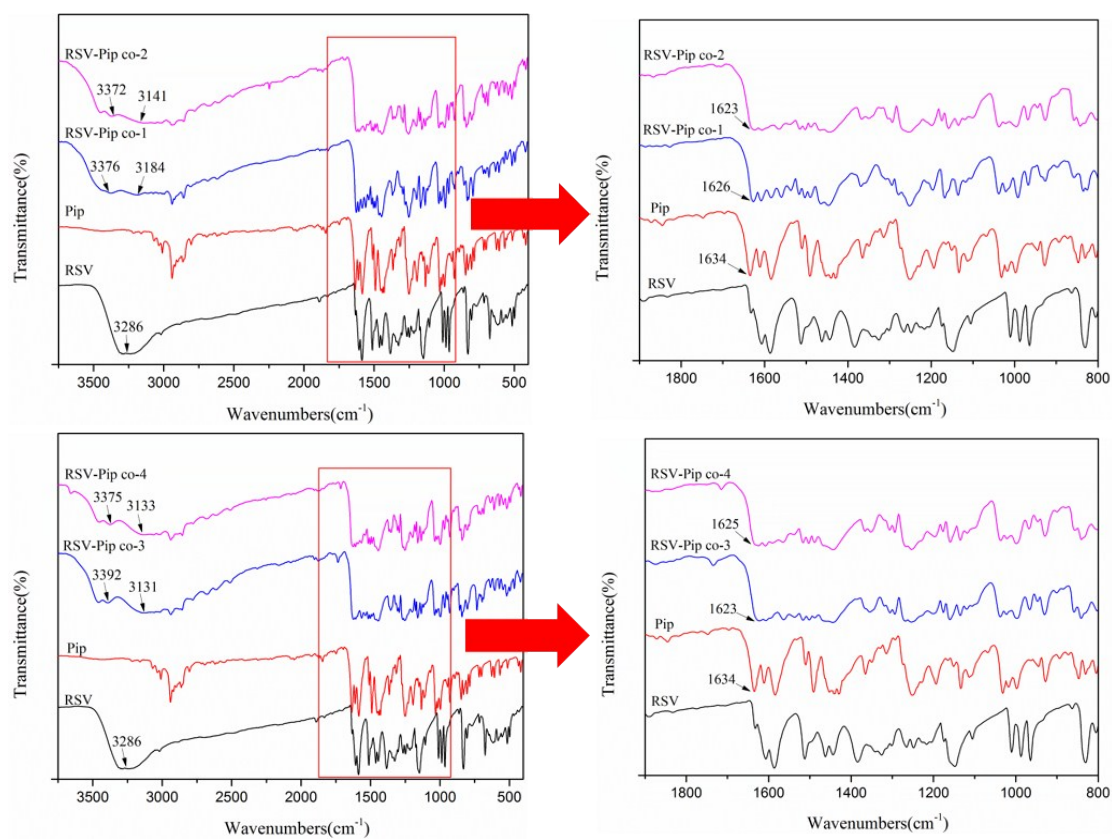
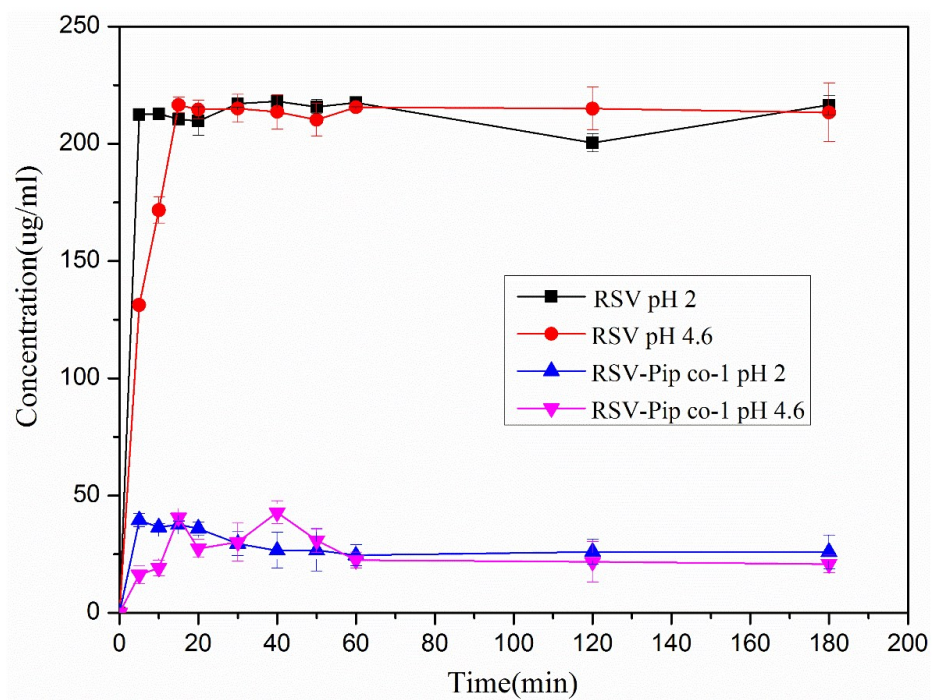
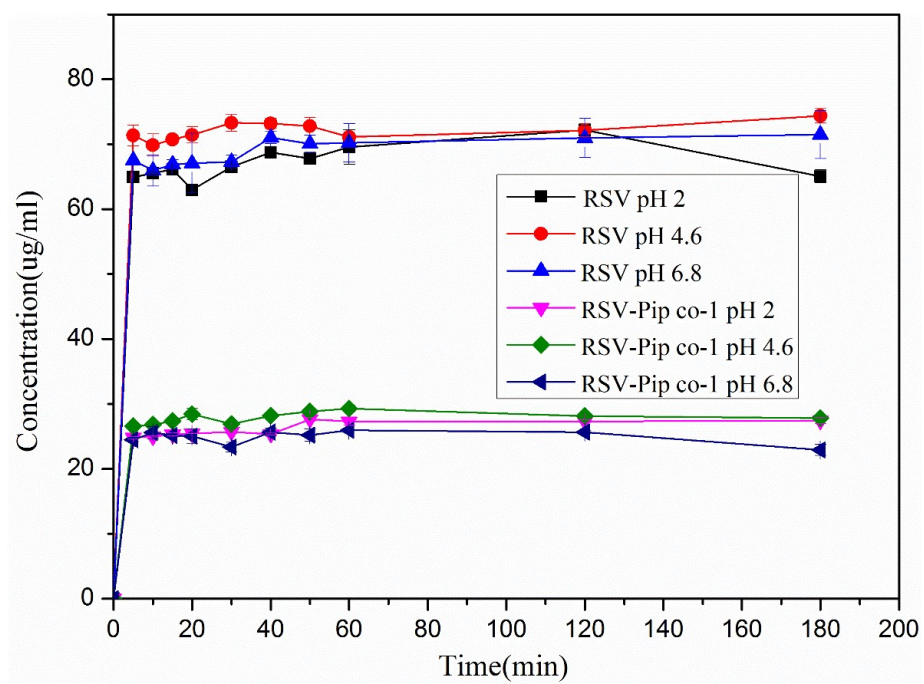


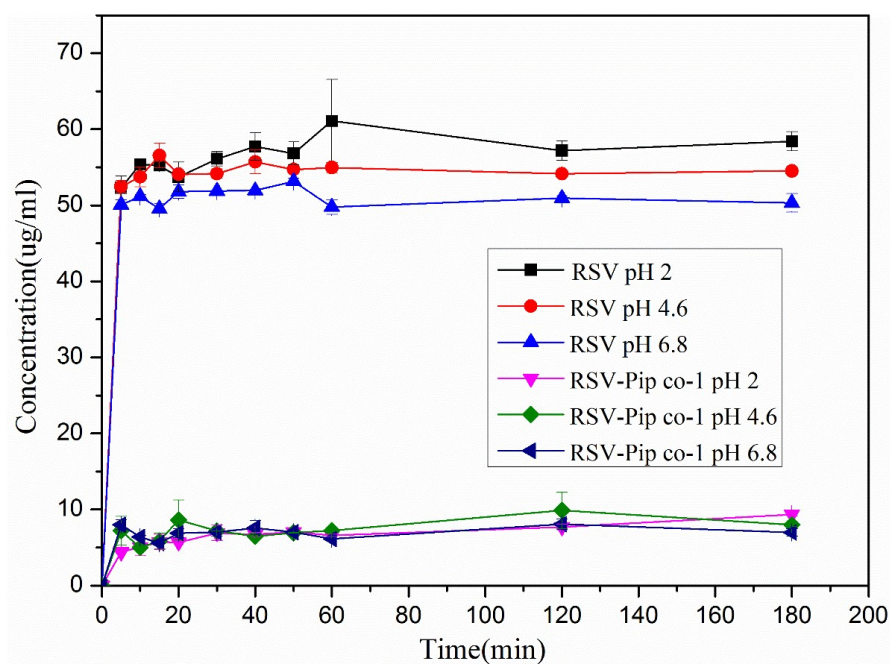
Figure S7. FT-IR spectra of RSV-Pip cocrystals and the components



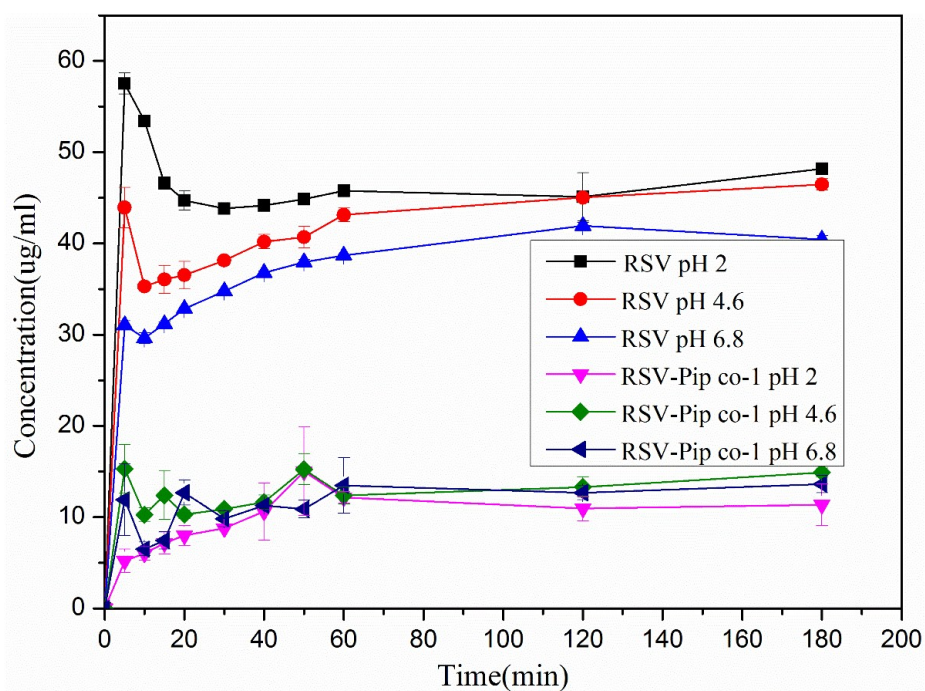
(a)



(b)



(c)



(d)

Figure S8. The powder dissolution profiles for RSV and RSV-Pip co-1 under different buffer media containing (a) 0.5% Tween (b) 0.1% SDS (c) 0.1% PEG 2000 and (d) 0.1% PVP K30