Electronic Supplementary Material (ESI) for CrystEngComm.

Supplementary data for

Modulating the solubility and pharmacokinetic property of 5-fluorouracil *via* cocrystals

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Table S1 Hydrogen bonding distances and angles of **5FU-34DHBA·2H$_2$O**, **5FU-35DHBA** and **5FU-25DHBA**.

Hydrogen bond	H···A (Å)	D···A (Å)	∠D–H···A (°)	Symmetry
5FU-34DHBA·2H$_2$O				
O4-H4···O1	2.05	2.853(17)	167.2	2-x,4-y,2-z
O3-H3···O8	1.92	2.735(17)	174.7	1+x,1+y,1+z
N2-H2B···O6	2.08	2.925(19)	167.6	-x,2-y,1-z
O8-H8B···O6	1.98	2.816(17)	165.8	-x,1-y,1-z
O7-H7A···O5	1.82	2.670(18)	175.9	x,-1+y,z
N1-H1···O4	2.12	2.921(18)	155.5	
N1-H1···O3	2.36	3.011(19)	132.5	
O8-H8A···O7	1.97	2.794(19)	163.8	
O2-H2···O7	1.84	2.634(18)	163.1	
5FU-35DHBA				
O3-H3···O5	1.99	2.729(18)	150.5	-x+1, -y, -z+1
O4-H4···O2	1.90	2.719(19)	175.1	x-2, y-1, z-1
N1-H1···O1	1.96	2.820(2)	174.4	-x+2, -y+2, -z+2
O6-H6···O1	1.86	2.667(19)	167.4	
N2-H2···O5	2.04	2.879(2)	164.4	
5FU-25DHBA				
N1-H1···O4	2.01	2.871(18)	173.3	-x+1, -y, -z
N2-H2A···O1	2.01	2.840(19)	160.9	x, y-1, z
O2-H2···O5	1.78	2.597(18)	174.3	x, y+1, z
O4-H4A···O6	1.89	2.708(17)	174.7	x+1, y-1, z
O3-H3···O1	1.90	2.612(16)	144.6	

Table S2 Bond lengths for **5FU-34DHBA·2H$_2$O**.

Atom	Atom	Length/Å	Atom	Atom	Length/Å
F1	C10	1.348(2)	C3	C2	1.378(2)
O4	C3	1.367(2)	C3	C4	1.406(2)
O3	C4	1.361(2)	C9	C10	1.333(3)
N2	C11	1.371(2)	C6	C5	1.385(3)
N2	C8	1.378(2)	C6	C1	1.395(2)
O5	C8	1.223(2)	C10	C11	1.440(2)
O2	C7	1.321(2)	C5	C4	1.383(2)
N1	C9	1.369(2)	C7	C1	1.482(2)
N1	C8	1.360(2)	C1	C2	1.393(2)
O1	C7	1.216(2)	C11	O6	1.236(2)

Table S3 Bond angles for **5FU-34DHBA·2H$_2$O**.

Atom	Atom	Atom	Angle/˚	Atom	Atom	Atom	Angle/˚
C11	N2	C8	126.62(15)	C6	C1	C7	121.53(16)
C8	N1	C9	123.07(15)	C2	C1	C6	119.38(16)
O4	C3	C2	123.78(15)	C2	C1	C7	119.08(15)
O4	C3	C4	116.62(14)	N2	C11	C10	113.22(15)
C2	C3	C4	119.60(16)	O6	C11	N2	121.93(15)
C10	C9	N1	119.59(16)	O6	C11	C10	124.85(15)
C5	C6	C1	119.67(16)	C3	C2	C1	120.92(16)
F1	C10	C11	116.08(15)	O3	C4	C3	116.65(15)
C9	C10	F1	121.66(15)	O3	C4	C5	124.03(15)
C9	C10	C11	122.24(16)	C5	C4	C3	119.32(15)
C4	C5	C6	121.07(16)	O5	C8	N2	122.01(16)
O2	C7	C1	113.24(15)	O5	C8	N1	122.79(16)
O1	C7	O2	123.06(16)	N1	C8	N2	115.20(15)
O1	C7	C1	123.70(16)				

Table S4 Bond lengths for **5FU-35DHBA**.

Atom	Atom	Length/Å	Atom	Atom	Length/Å
F1	C3	1.345(2)	N1	C2	1.385(2)
O1	C1	1.238(2)	C9	C8	1.388(2)
O5	C11	1.228(2)	C9	C10	1.401(2)
O3	C7	1.3735(19)	C6	C5	1.400(2)
O4	C9	1.3549(19)	C6	C7	1.381(2)
O6	C11	1.318(2)	C8	C7	1.396(2)
O2	C2	1.225(2)	C5	C11	1.483(2)
N2	C1	1.353(2)	C5	C10	1.388(2)
N2	C4	1.375(2)	C2	C3	1.431(3)
N1	C1	1.370(2)	C3	C4	1.347(3)

Table S5 Bond angles for **5FU-35DHBA**.

Atom	Atom	Atom	Angle/˚	Atom	Atom	Atom	Angle/˚
C1	N2	C4	122.92(16)	O3	C7	C8	116.83(16)
C1	N1	C2	126.05(15)	C6	C7	C8	121.11(16)
O4	C9	C8	122.50(16)	O5	C11	O6	122.31(16)
O4	C9	C10	116.54(15)	O5	C11	C5	123.58(14)
C8	C9	C10	120.96(16)	O6	C11	C5	114.10(13)
O1	C1	N2	122.73(16)	C5	C10	C9	118.72(15)
O1	C1	N1	121.29(16)	O2	C2	N1	120.86(16)
N2	C1	N1	115.98(15)	O2	C2	C3	125.80(16)
C7	C6	C5	119.10(15)	N1	C2	C3	113.33(16)
C9	C8	C7	119.07(17)	F1	C3	C2	116.52(16)
C6	C5	C11	118.17(14)	F1	C3	C4	121.23(17)
C10	C5	C6	121.02(16)	C4	C3	C2	122.24(16)
C10	C5	C11	120.81(14)	C3	C4	N2	119.22(17)
O3	C7	C6	122.06(14)				

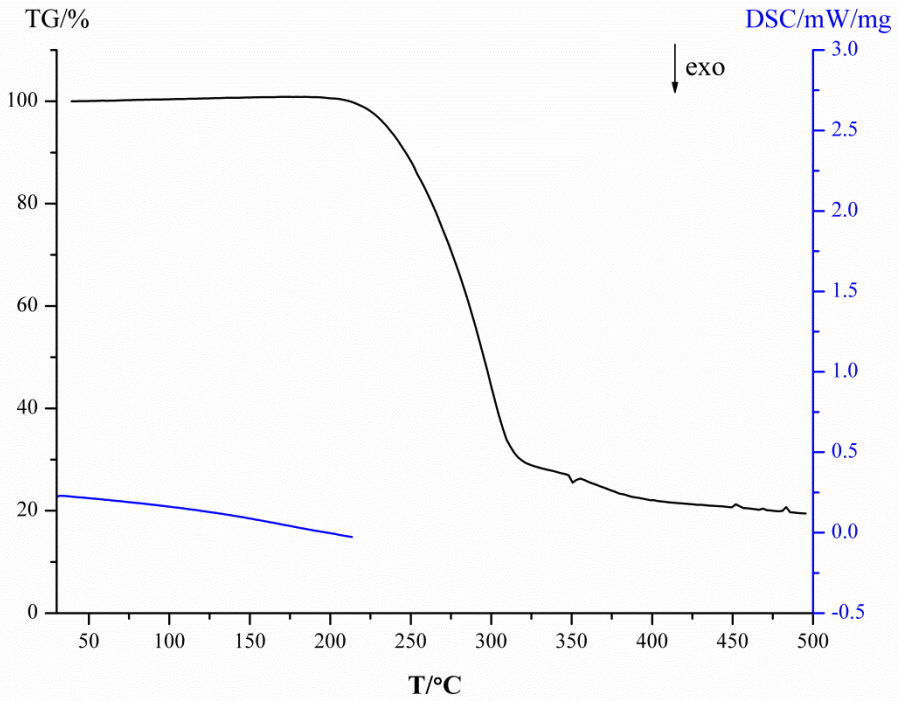
Table S6 Bond lengths for **5FU-25DHBA**.

Atom	Atom	Length/Å	Atom	Atom	Length/Å
C1	C2	1.474(2)	C6	O4	1.372(2)
C1	O1	1.231(2)	C8	N1	1.371(2)
C1	O2	1.318(2)	C8	N2	1.364(2)
C2	C3	1.410(2)	C8	O5	1.227(2)
C2	C7	1.394(3)	C9	C10	1.335(3)
C3	C4	1.392(3)	C9	N2	1.369(2)
C3	O3	1.360(2)	C10	C11	1.450(2)
C4	C5	1.378(3)	C10	F1	1.345(2)
C5	C6	1.396(2)	C11	N1	1.376(2)
C6	C7	1.378(2)	C11	O6	1.222(2)

Table S7 Bond angles for **5FU-25DHBA**.

Atom	Atom	Atom	Angle/˚	Atom	Atom	Atom	Angle/˚
O1	C1	C2	122.45(14)	C6	C7	C2	120.30(15)
O1	C1	O2	122.70(15)	N2	C8	N1	115.48(16)
O2	C1	C2	114.84(15)	O5	C8	N1	121.37(15)
C3	C2	C1	119.27(15)	O5	C8	N2	123.15(16)
C7	C2	C1	120.55(14)	C10	C9	N2	120.08(15)
C7	C2	C3	120.19(15)	C9	C10	C11	121.97(17)
C4	C3	C2	118.40(16)	C9	C10	F1	121.44(15)
O3	C3	C2	123.50(16)	F1	C10	C11	116.58(15)
O3	C3	C4	118.09(14)	N1	C11	C10	112.82(15)
C5	C4	C3	121.14(15)	O6	C11	C10	125.11(17)
C4	C5	C6	120.12(16)	O6	C11	N1	122.06(16)
C7	C6	C5	119.83(16)	C8	N1	C11	126.98(14)
O4	C6	C5	122.47(16)	C8	N2	C9	122.62(15)
O4	C6	C7	117.69(15)				

(a)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DSC/mW/mg
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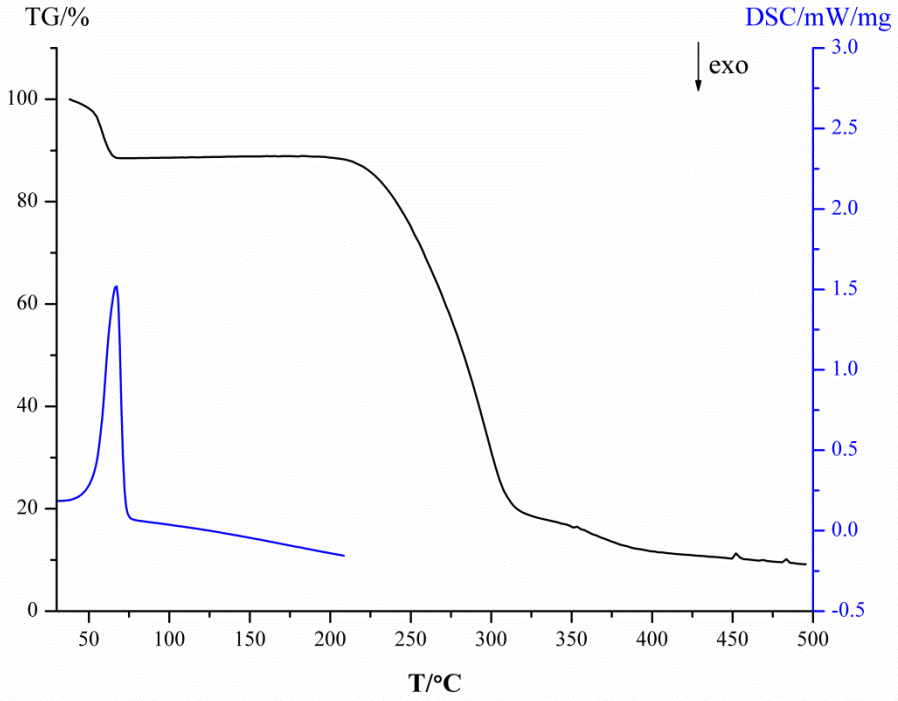
80
60
40
20
0
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
50
100
150
200
250
300
350
400
450
500
T/°C

(b)


TG/%
DSC/mW/mg
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80
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T/°C

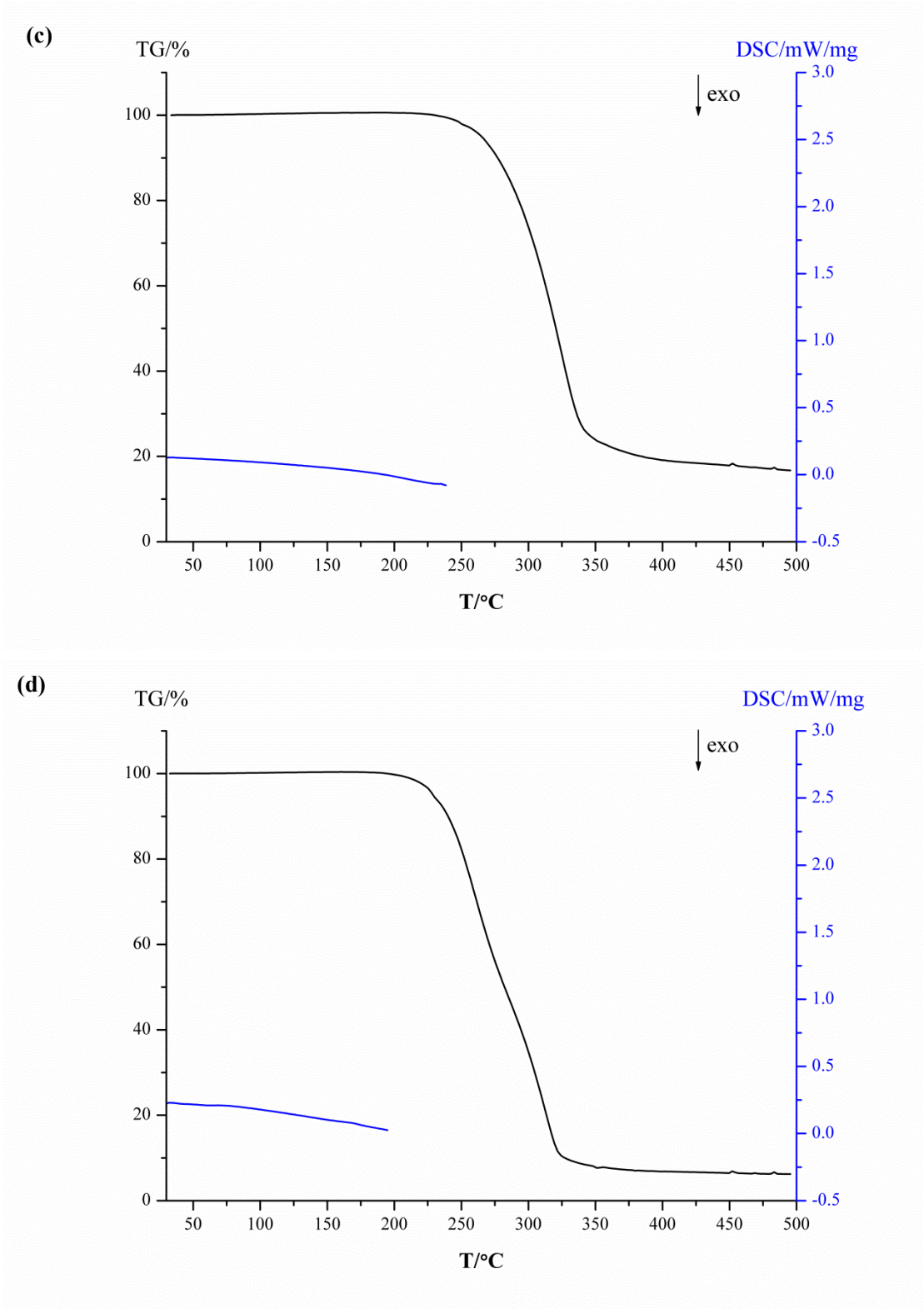

Fig. S1 TG-DSC curves for (a) **5FU-34DHBA**, (b) **5FU-34DHBA·2H$_2$O**, (c) **5FU-35DHBA** and (d) **5FU-25DHBA**.

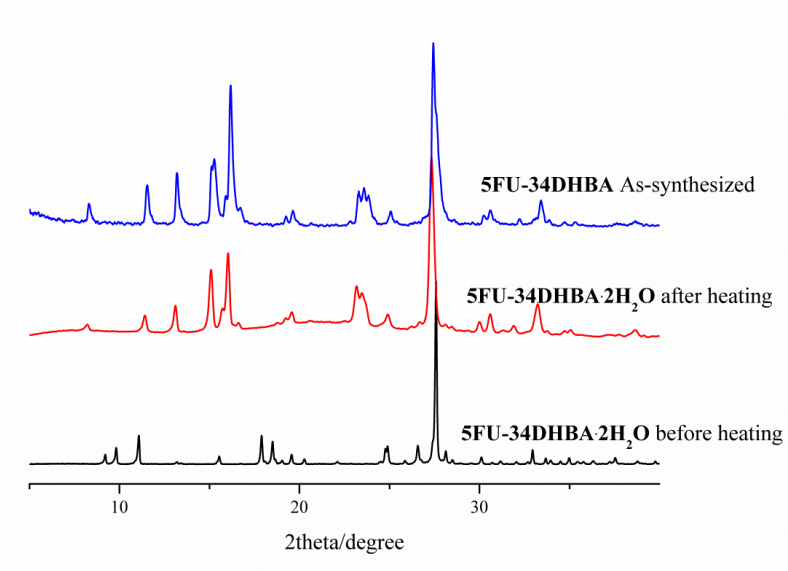

Fig. S2 PXRD patterns before and after heating of **5FU-34DHBA·2H₂O**.

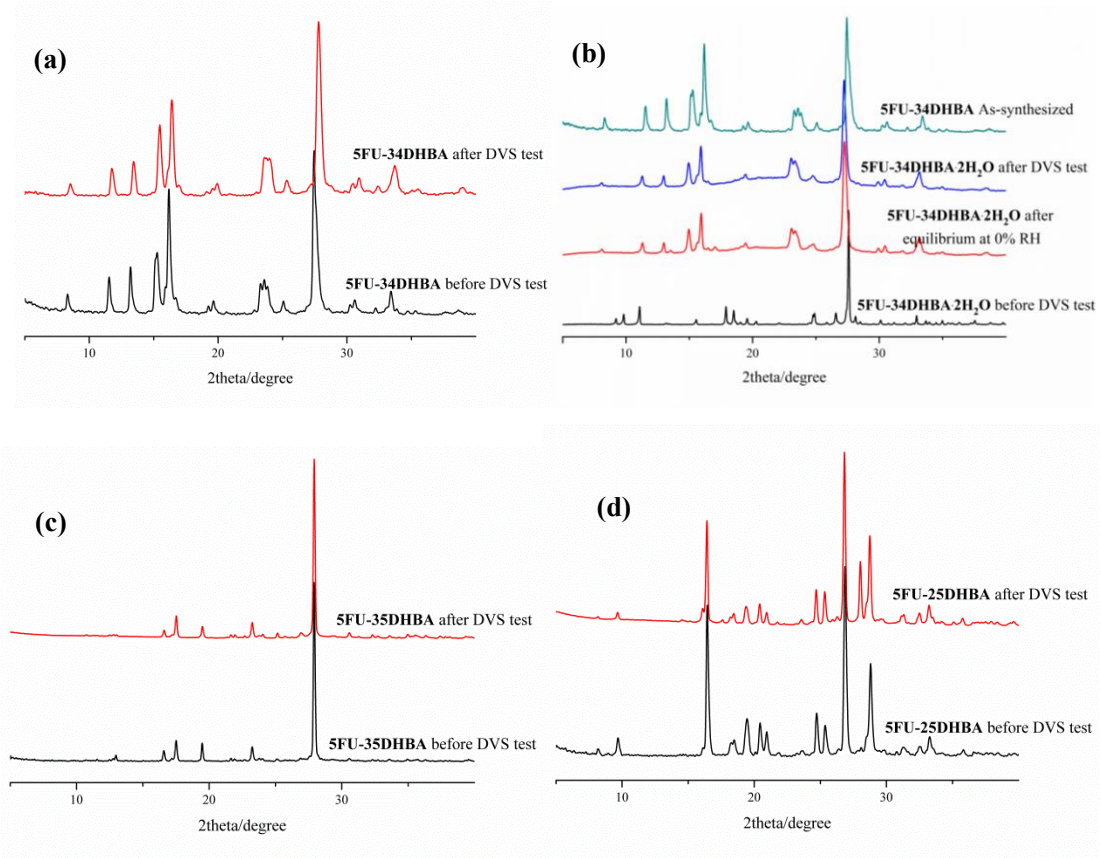

Fig. S3 PXRD patterns before and after DVS test for (a) **5FU-34DHBA**, (b) **5FU-34DHBA·2H₂O**, (c) **5FU-35DHBA** and (d) **5FU-25DHBA**.

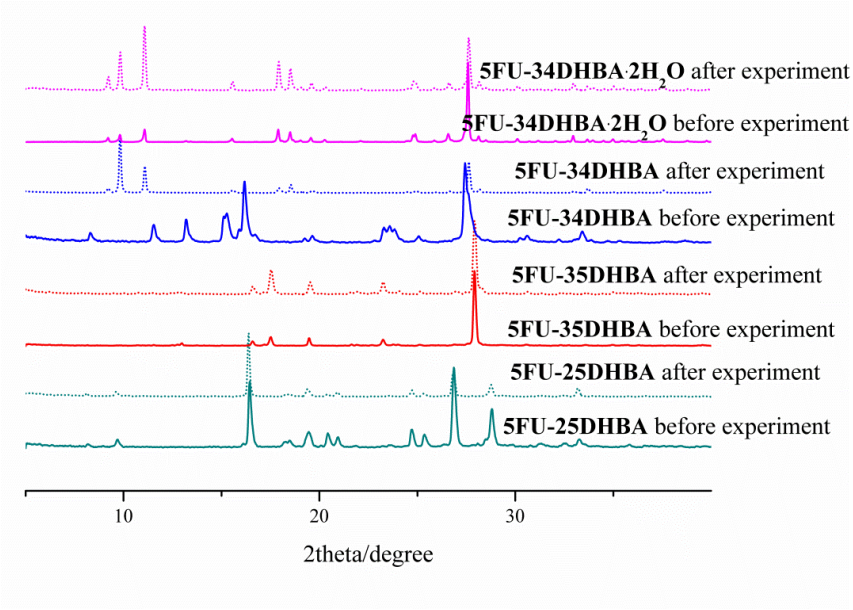

Fig. S4 PXRD patterns of cocrystals before and after dissolution experiments.