Supporting Information

Preparation of *trans*-Crocetin with High Solubility, Stability, and Oral Bioavailability by Incorporation into Three Types of Cyclodextrins

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Table S1 Drug encapsulation efficiency of each CRT/CD inclusion complexes.

NO.	EE (%)		
	CRT/α-CD IC	CRT/HP-β-CD IC	CRT/γ-CD IC
1	88.84	89.34	92.37
2	89.80	89.99	91.41
3	88.96	90.47	91.93
Mean	89.20±0.43	89.93±0.57	91.90±0.39
RSD (%)	0.59%	0.63%	0.52%

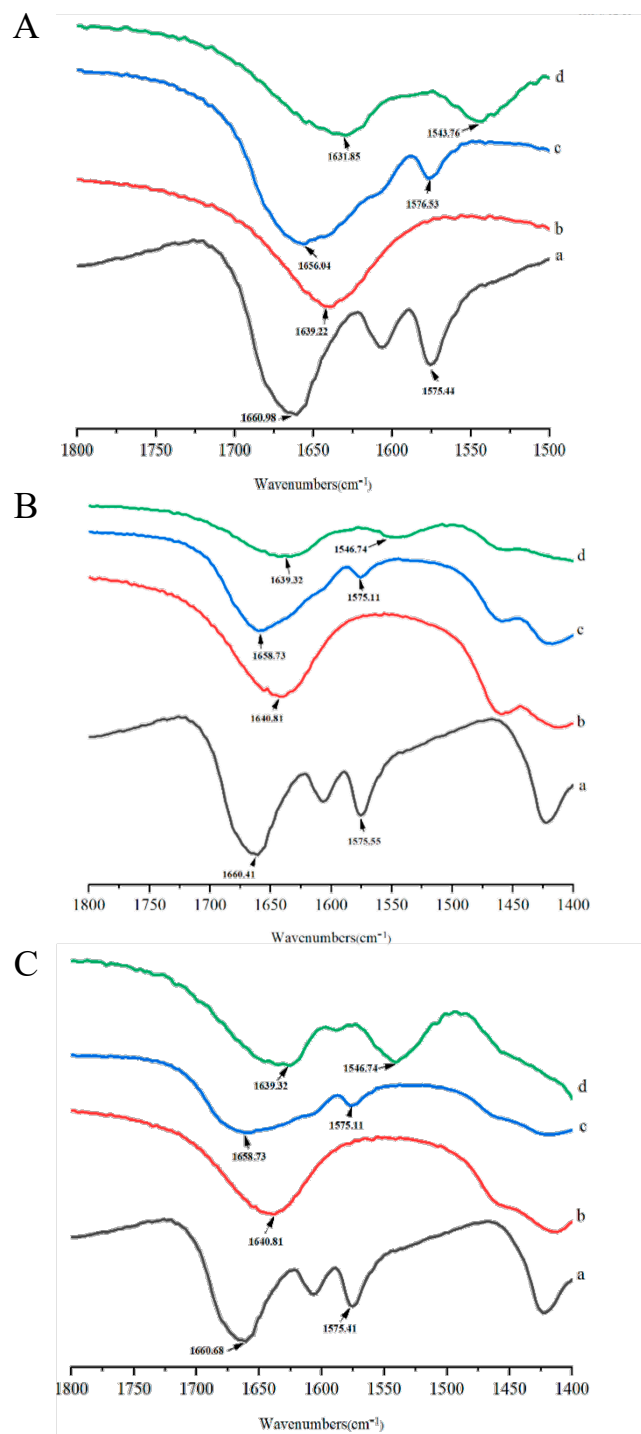**Figure S1**. FT-IR spectra of (a) CRT, (b) CD, (c) PM, and (d) IC in CRT/α-CD system (**A**), CRT/HP-β-CD system (**B**), and CRT/γ-CD system (**C**) from 1800-1400 cm⁻¹.

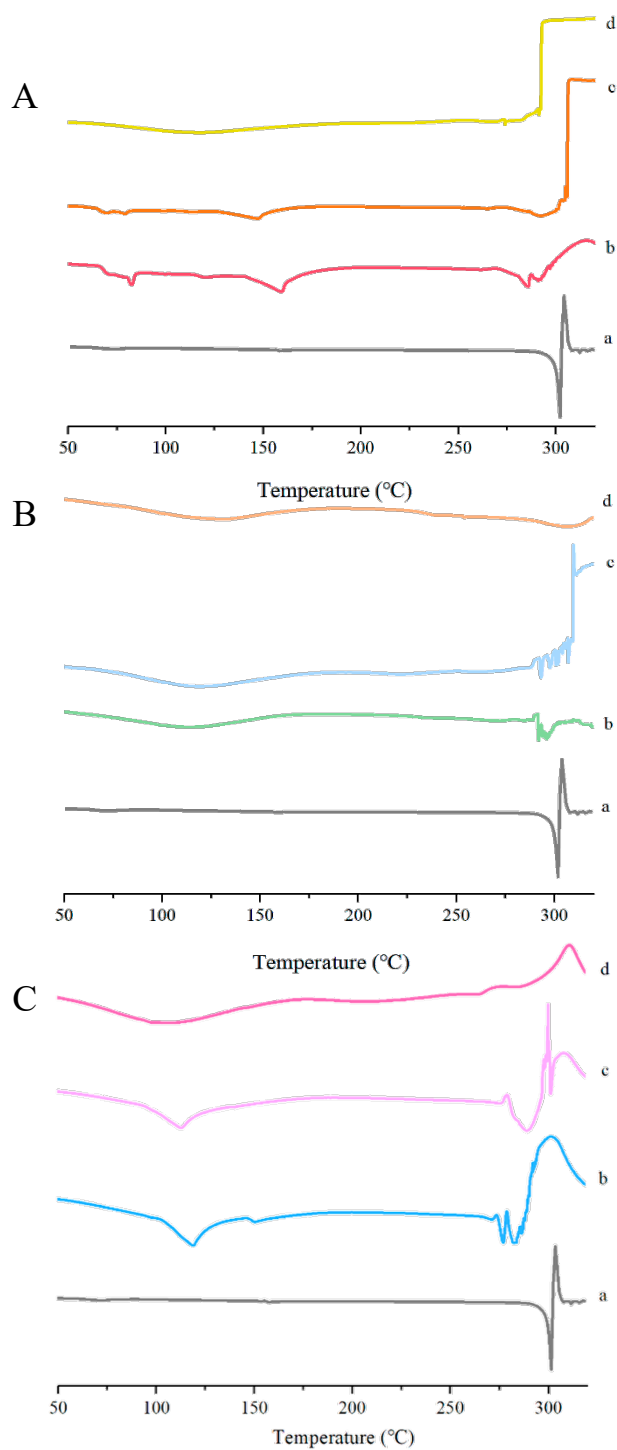**Figure S2**. DSC curves of (a) CRT, (b) CD, (c) PM, and (d) IC in CRT/α-CD system (**A**), CRT/HP-β-CD system (**B**), and CRT/γ-CD system (**C**), respectively.
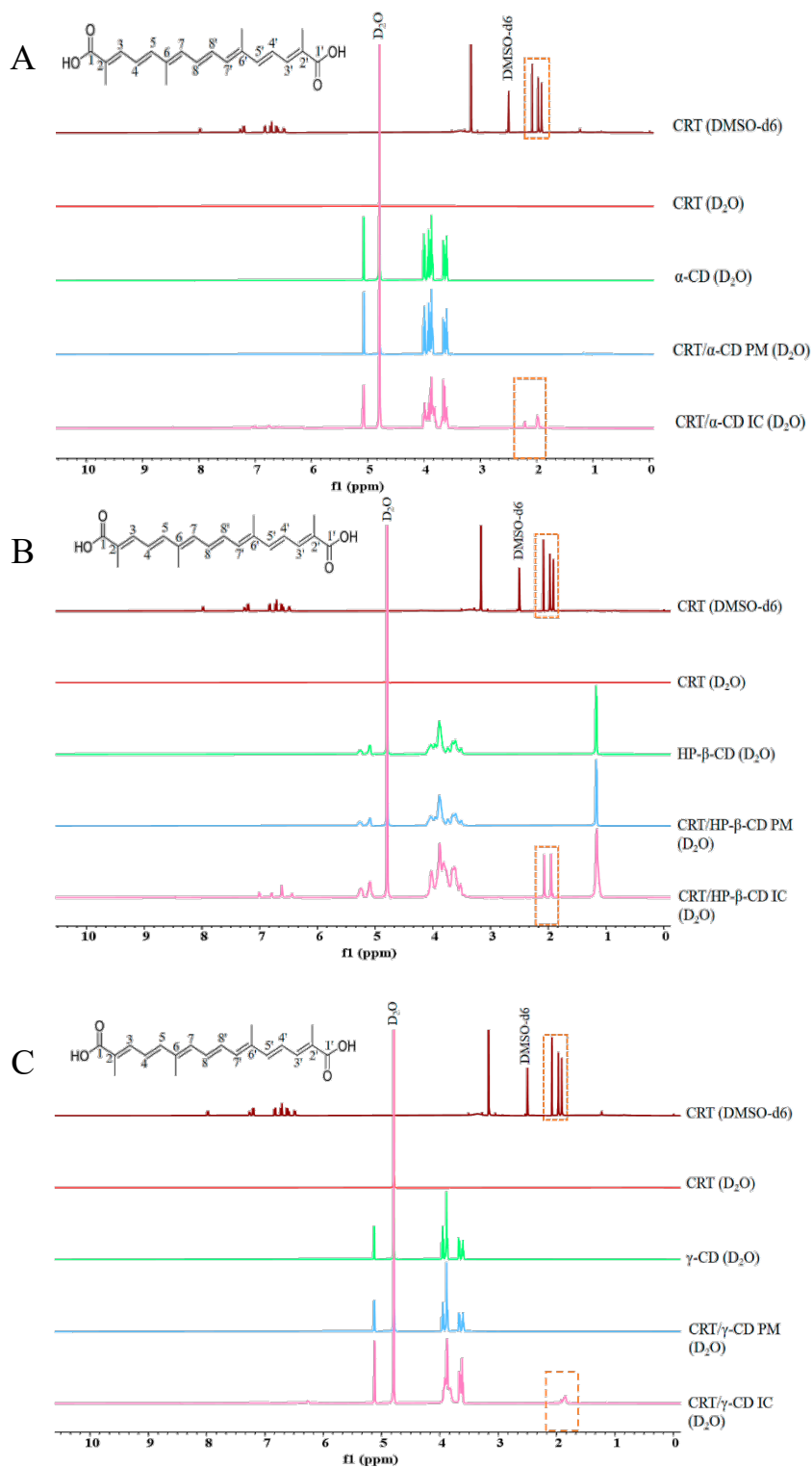
Figure S3. ^{1}H NMR spectra of CRT (DMSO-d6), CRT (D$_2$O), CD (D$_2$O), PM (D$_2$O), and IC (D$_2$O) in CRT/α-CD system (**A**), CRT/HP-β-CD system (**B**), and CRT/γ-CD system (**C**) from 0-10 ppm.

Table S2 Thermodynamic parameters of three inclusion complexes.

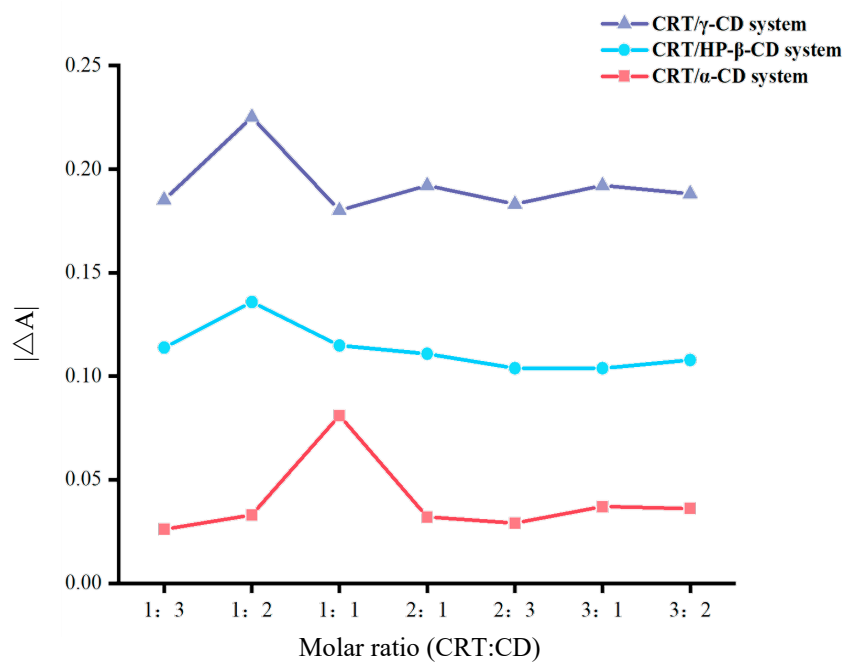| CD	T (°C)	Equation	$\triangle$G (KJ)	Ks (L·mol^{-1})
α-CD	37	Y=0.007x+0.22*10^{-5}	-20.67	3027.39
HP-β-CD	37	Y=0.017x-0.22*10^{-5}	-23.15	7912.04
γ-CD	37	Y=0.001x+0.22*10^{-5}	-15.62	427.45

Figure S4. Molar ratio experiments of (■) CRT/α-CD IC, (●) CRT/HP-β-CD IC, and (▲) CRT/γ-CD IC by continuous variation method.
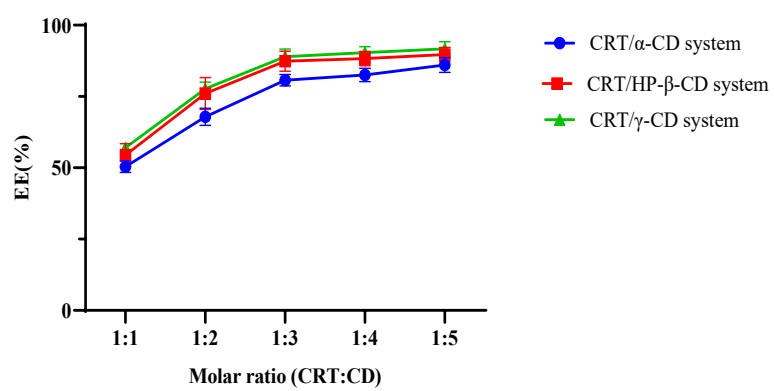
Figure S5. Effects of molar ratio time on encapsulation efficiency (n = 3, mean $\pm$ S.D.).