Supporting Information

pH-Responsive Emulsions with *β*-Cyclodextrin/Vitamin E Assembled Shells for Controlled Delivery of Polyunsaturated Fatty Acids

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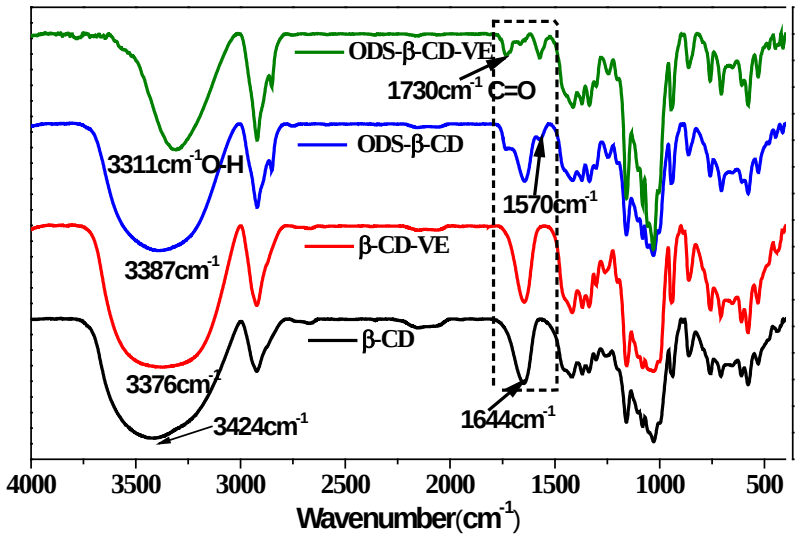

Figure S1. FT-IR spectra of nanoparticles.

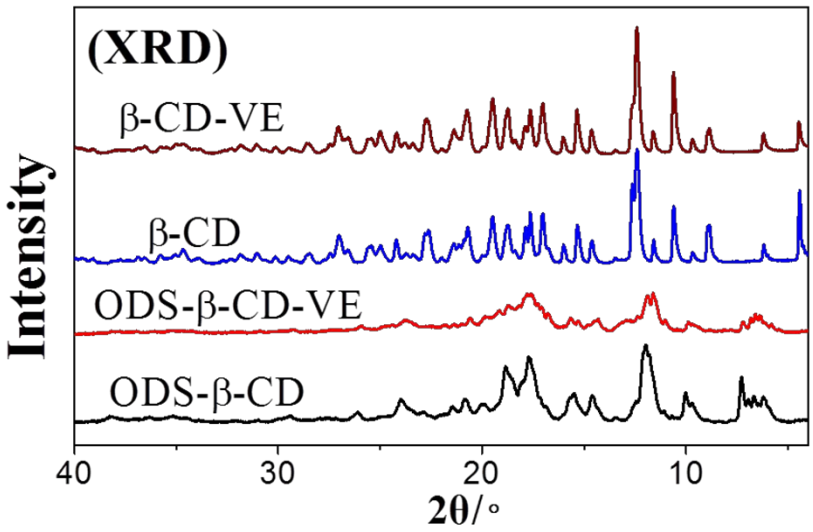

Figure S2. X-ray diffraction pattern of nanoparticles.

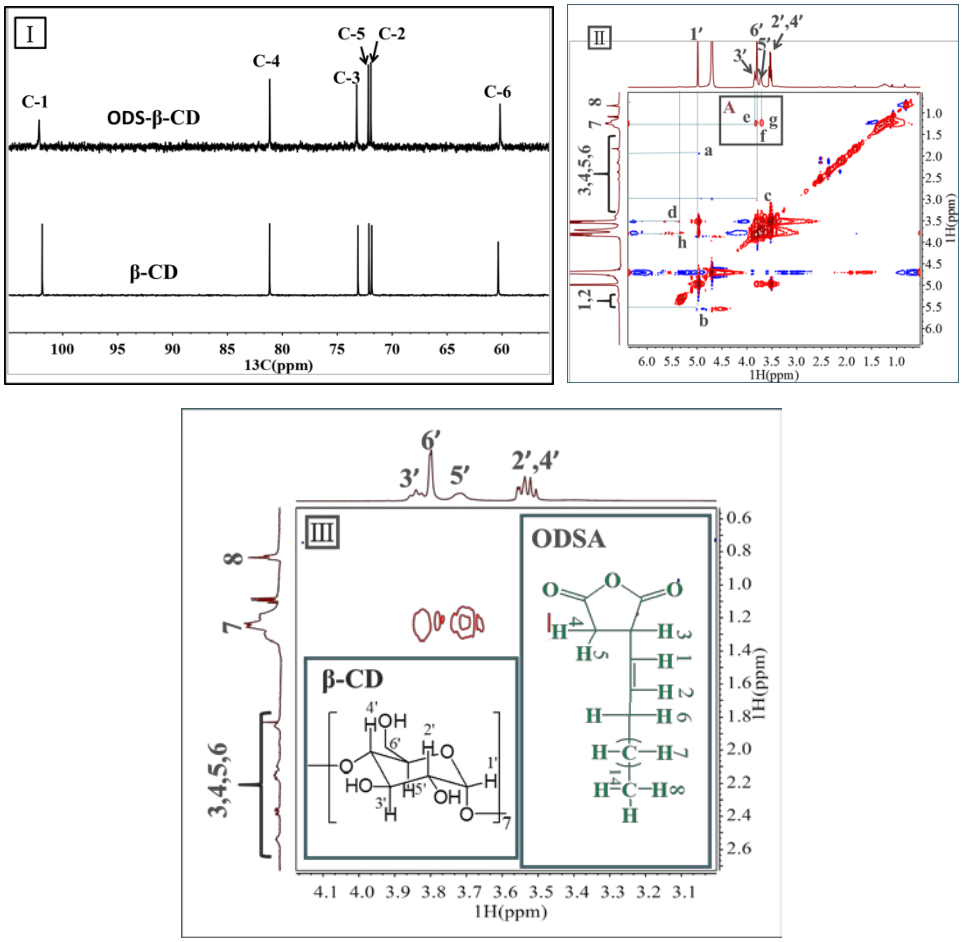

Fig S3. (I) ^{13}C NMR spectra of β-CD (DS=0) and ODS-β-CD-3(DS=0.019), respectively; (II) a 2D ^{1}H– ^{1}H two-dimensional Nuclear Overhauser Enhancement Spectroscopy (NOESY) spectrum of the ODS-β-CD-3 in D_2O. (III) section is an enlarged section of the (A) section in the (II) section (Data is taken from our previous research)[1].

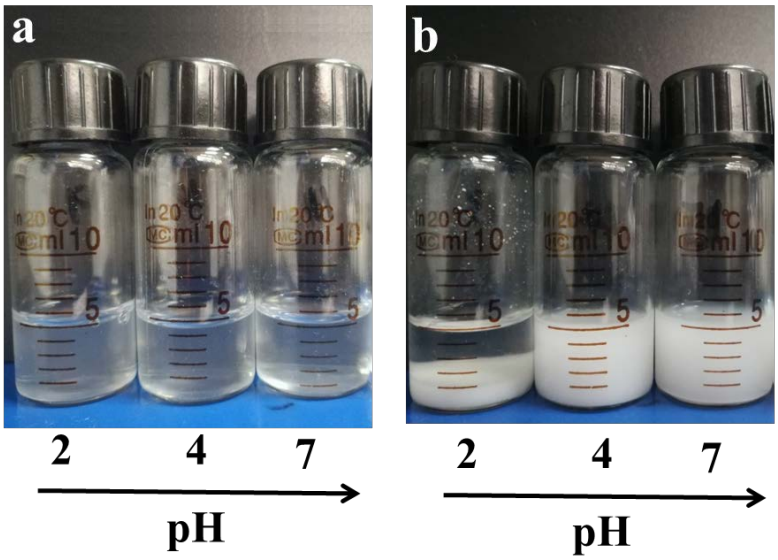

Figure S4. Photographs of solution prepared by β-CD-VE (a) and ODS-β-CD-VE (b) treated with different pH (2, 4, 7).

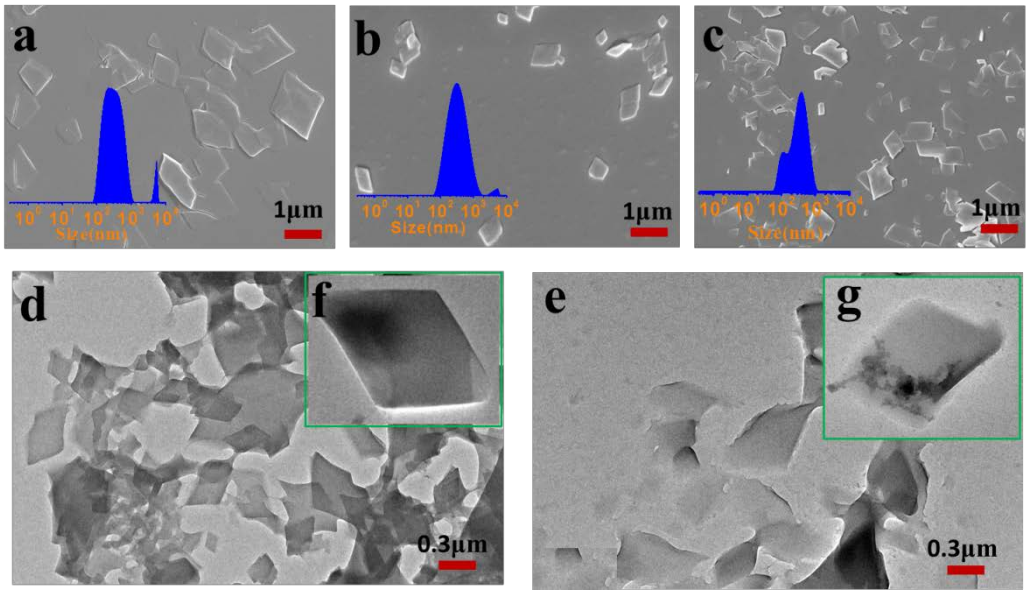

Figure S5. SEM of ODS-β-CD-VE treated with different pH 2(a), 4(b), 7(c); And TEM of ODS-β-CD-VE treated with different pH 3 (d) (Using pH 3 substitute pH 2, because the copper mesh was eroded at pH 2.), 7 (e) respectively; (f) the magnification of (d),(g) the magnification of (e).

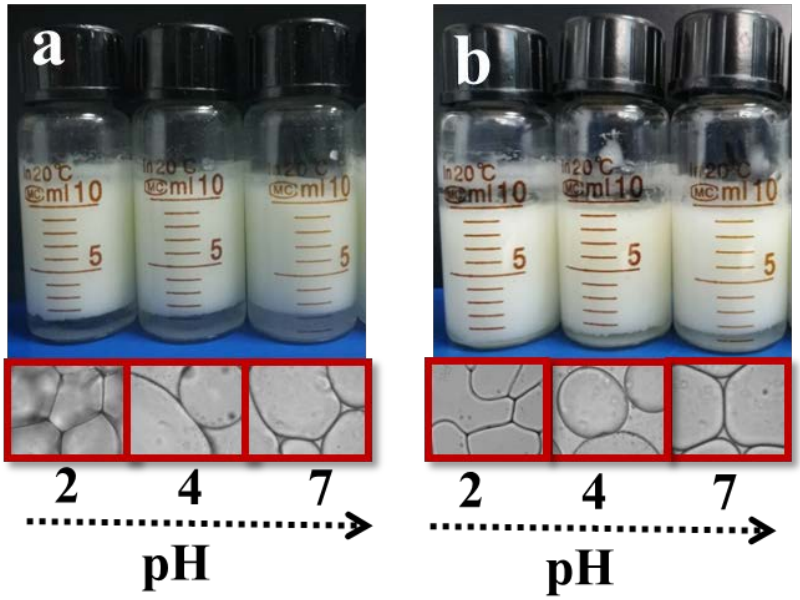

Figure S6. Photographs and optical micrographs of the emulsion stabilized by β-CD-VE with different pH (2, 4, 7), particle concentration was 0.5 wt%, were taken after 1 h(a) and 30days(b) of quiescent storage.

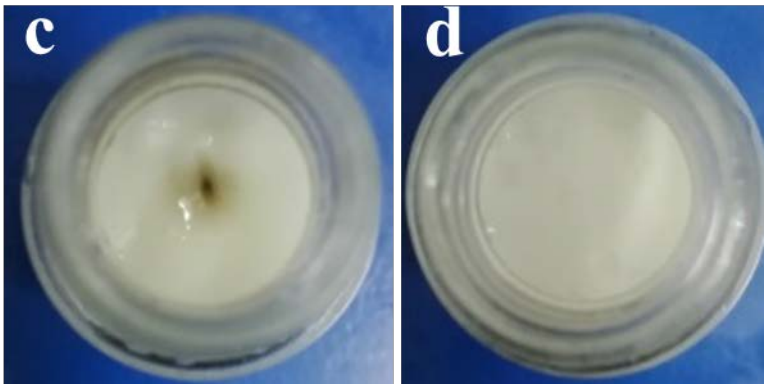

Figure S7. Photographs of the emulsion stabilized by β-CD-VE (c) and ODS-β-CD-VE (d) with different pH 4, particle concentration was 0.5 wt%, were taken after 30days of quiescent storage. β-CD-VE stabilized emulsion showed black spots in the emulsion after storage for 30 days, but such bad phenomenon didn't appear in emulsion stabilized by ODS-β-CD-VE.

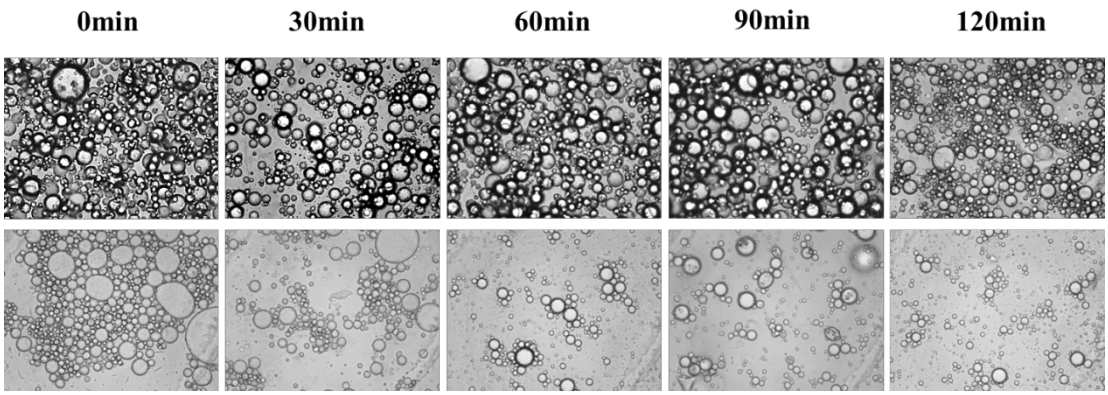

Figure S8. Microstructure integrity observation of β-CD-VE along with SGF (top row) SIF digestion (bottom row) at 0, 30, 60, 90, and 120 min.

Table S1. ^{13}C NMR spectrum assignment of β-CD and ODS-β-CDs

Functional groups	δ/ppm	
	β-CD	ODS-β-CD
C-1	101.87	102.15(+0.28)
C-2	72.11	72.18(+0.07)
C-3	73.12	73.23(+0.11)
C-4	81.17	81.15(-0.02)
C-5	71.87	71.95(+0.08)
C-6	60.35	60.18(-0.17)

Table S2. NOESY assignment of ODS-β-CD-VE

Functional groups	δ/ppm	Functional groups	δ/ppm	Functional groups	δ/ppm
1′	4.82	6	1.93-1.99	G	1.50-1.56
2′	3.29	7	1.23	J	1.39
3′,6′	3.61-3.68	9	0.85	K	1.23
4′	3.34	A	2.58	L	1.21
5′	3.55	B	2.31	M	1.12
7′	3.74	C	2.09	N	1.05
8′	3.70	D	2.02	P	0.87
9′	4.46	E	1.97	Q	0.86
1，2	5.30-5.55	F	1.81-1.73	R	0.85

Reference

[1] Xi, Y.; Luo, Z.; Lu, X.; Peng, X., Modulation of Cyclodextrin Particle Amphiphilic Properties to Stabilize Pickering Emulsion. *J. Agric. Food Chem.* **2018**, *66*, 228.