Supplementary Information

for

Curcumin-loaded Pickering emulsion stabilized by insoluble complexes involving ovotransferrin–gallic acid conjugate and carboxymethyldextran

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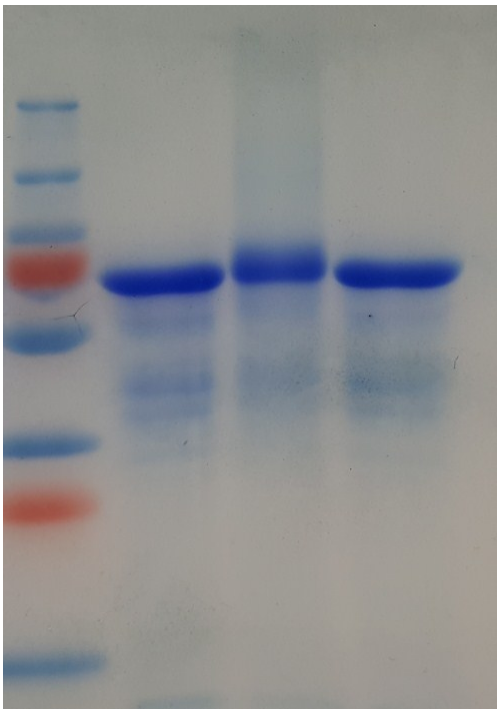


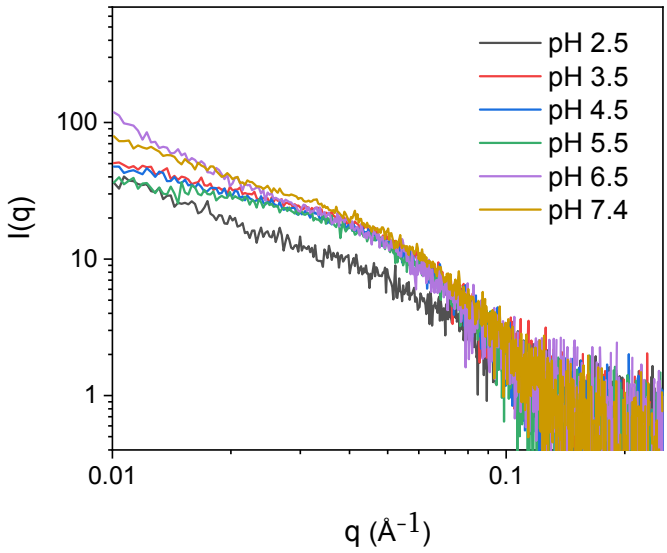
Fig. S1. SDS-PAGE profiles of OVTC, OTGCONJ and OTGMIX. Lanes from left to right are protein marker, OVTC, OTGCONJ and OTGMIX. The marker bands from down to up correspond to 15, 25, 35, 55, 70, 100, 130 and 250 kDa.

Table S1. Total phenolic content of OTGCONJ

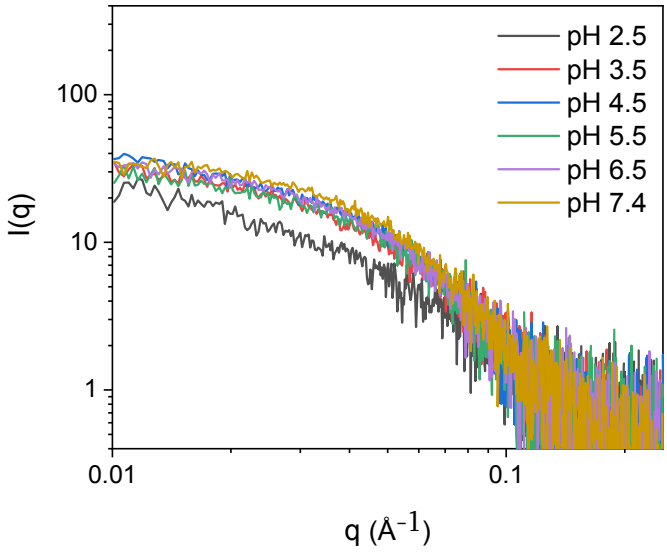
Samples	Total phenolic content (mg/g sample)
OTGCONJ	36.52±0.10

Table S2. ABTS radical scavenging capacity of OTGCONJ and OTGMIX

Samples	Antioxidant activity (nmol TE/ mg sample)
OTGCONJ	1343.9±42.0
OTGMIX	1391.7±26.2

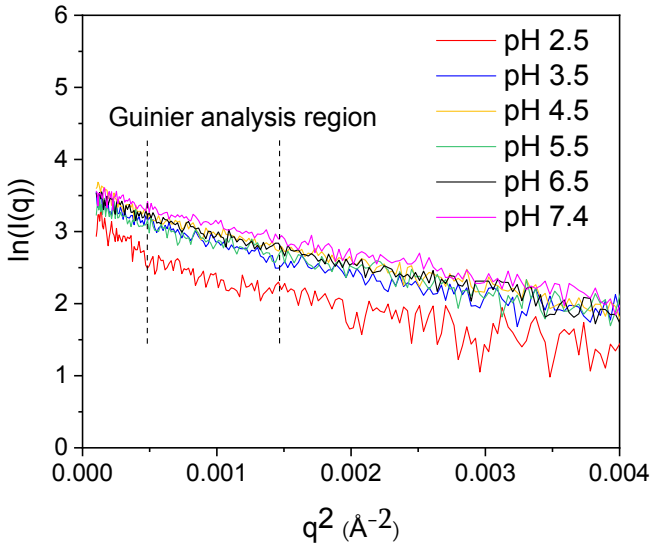


(a)

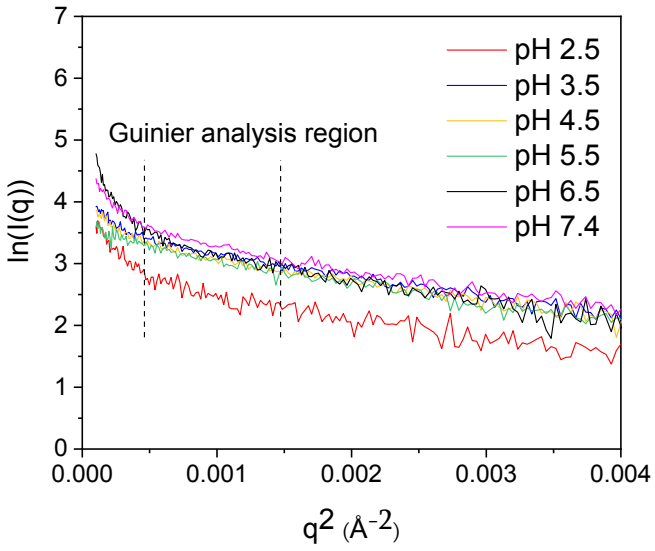


(b)

Fig. S2. Scattering intensity profiles of OVTC (a) and OTGMIX (b) solutions at different pHs



(a)



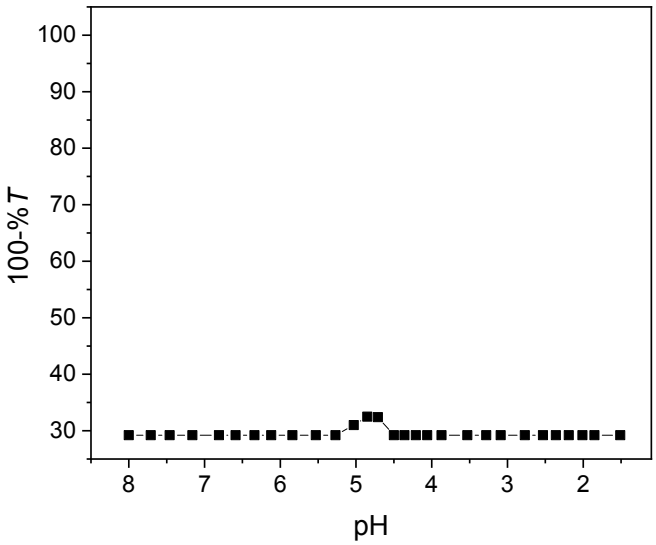
(b)

Fig. S3. Guinier plots of OVTC at different pHs (a) and OTGMIX at different pHs (b)

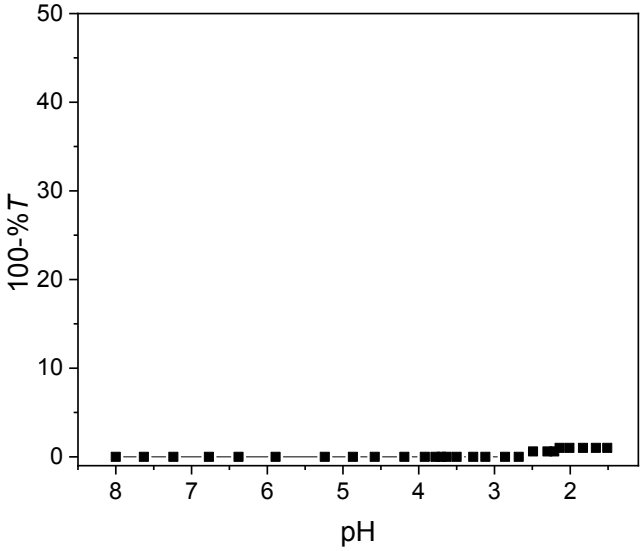
Table S3. Radius of gyration (R_g) of OVTC and OTGMIX at different pHs fitted from SAXS intensity profiles

OVTC	R_g (Å)	OTGMIX	R_g (Å)
pH 2.5	43.9±0.2^e	pH 2.5	44.0±0.2^e
pH 3.5	36.2±0.1^a	pH 3.5	41.2±0.1^d
pH 4.5	36.6±0.1^b	pH 4.5	37.5±0.1^c
pH 5.5	36.5±0.1^b	pH 5.5	35.3±0.1^a
pH 6.5	40.6±0.1^d	pH 6.5	37.3±0.1^c
pH 7.4	38.9±0.1^c	pH 7.4	36.0±0.1^b

Values are means±SD (n=3). Different superscript letters for the same column indicate significant differences ($p < 0.05$).

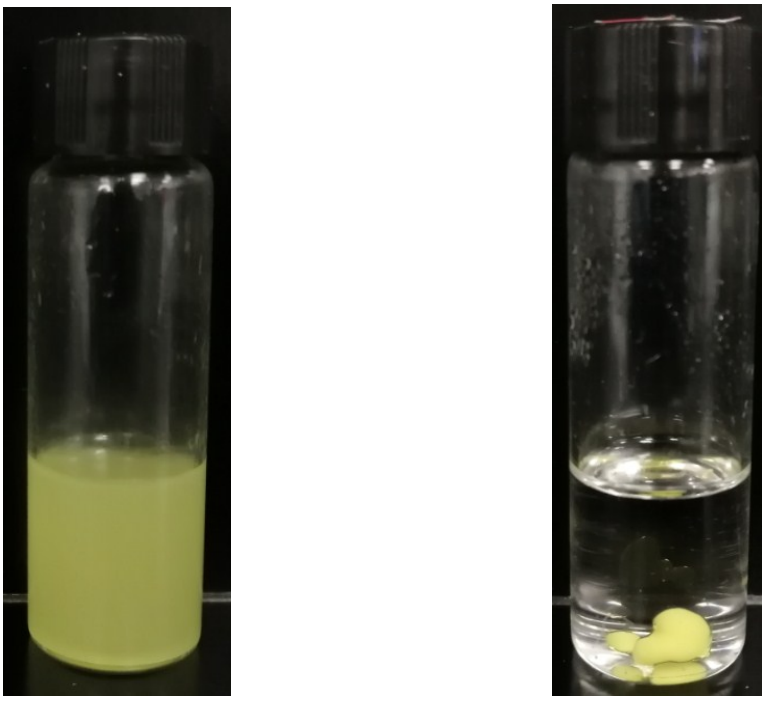


(a)



(b)

Fig. S4. (a) Turbidity of individual OTGCONJ solution as a function of pH. (b) Turbidity of CMD solution as a function of pH.



(a) (b)

Fig. S5. (a) Dispersion of OTGCONJ–CMD particle-stabilized Pickering emulsion in pure water. (b) Dispersion of OTGCONJ–CMD particle-stabilized Pickering emulsion in pure MCT oil.

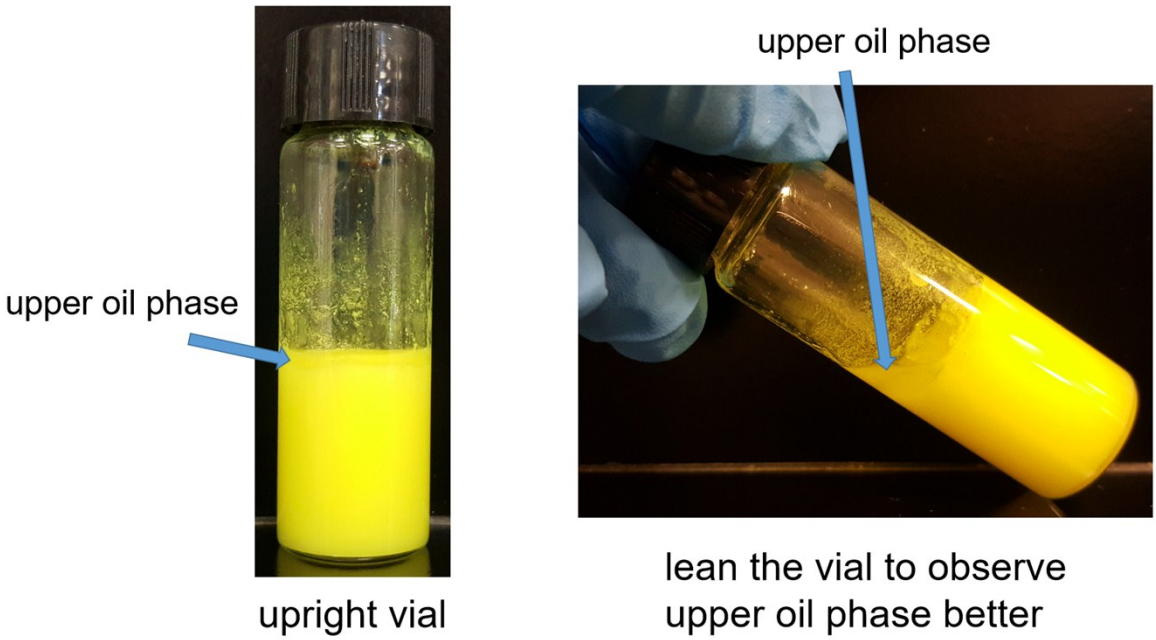


Fig. S6. Visual appearance of freshly prepared Pickering emulsion stabilized by OTGMIX–CMD particles

Table S4. Emulsified phase volume fraction of OTGCONJ–CMD particle-stabilized Pickering emulsion and OTGMIX–CMD particle-stabilized Pickering emulsion after fresh preparation

Emulsion stabilized by	Upper oil phase	Lower aqueous phase	Emulsified phase volume (%)
OTGCONJ–CMD particles	None	None	100.0±0.1
OTGMIX–CMD particles	Exist	None	92.3±0.3

Fig. S7. Visual observation of OTGMIX–CMD particles (0.2 wt%) after storage for 15 min

Table S5. Reaction rate constants (k) of curcumin degradation against UV light exposure in bulk MCT oil, Pickering emulsion stabilized by ovotransferrin–CMD particles (non-antioxidant particles without gallic acid) and Pickering emulsion stabilized by OTGCONJ–CMD particles

Sample	k (s^{-1})
MCT oil	$(2.70\pm0.04)\times10^{-5c}$
ovotransferrin–CMD particle-stabilized emulsion	$(2.04\pm0.05)\times10^{-5b}$
OTGCONJ–CMD particle-stabilized emulsion	$(1.56\pm0.02)\times10^{-6a}$

Values are means±SD (n=3). Different superscript letters for the same column indicate significant differences ($p < 0.05$).