

Electronic Supplementary Material (ESI) for Food & Function.

Table S1. MS conditions and optimized MRM transitions and compound-dependent parameters for UPLC-MS/MS analysis of daidzein and their respective internal standards.

MS Conditions	
Ion mode	H-ESI positive ionization
Ion transfer tube temperature (°C)	325
Vaporiser temperature (°C)	350
Capillary voltage (V)	4363.64
Dwell time (ms)	50

MRM Parameters						
Compound	Retention time (min)	Parent ion (m/z)	Compound type	Product ion (m/z)	Collision energy (V)	Rf lens (V)
Daidzein	1.75	255	Confirming	137.012	26.31	119
			Confirming	152.167	43.92	119
			Confirming	181.024	31.16	119
			Target	198.982	24	119
Daidzein-D3	1.74	257.9	Confirming	138	27.7	175
			Confirming	184.042	31.24	175
			Confirming	155.054	40.43	175
			Target	138	27.7	175

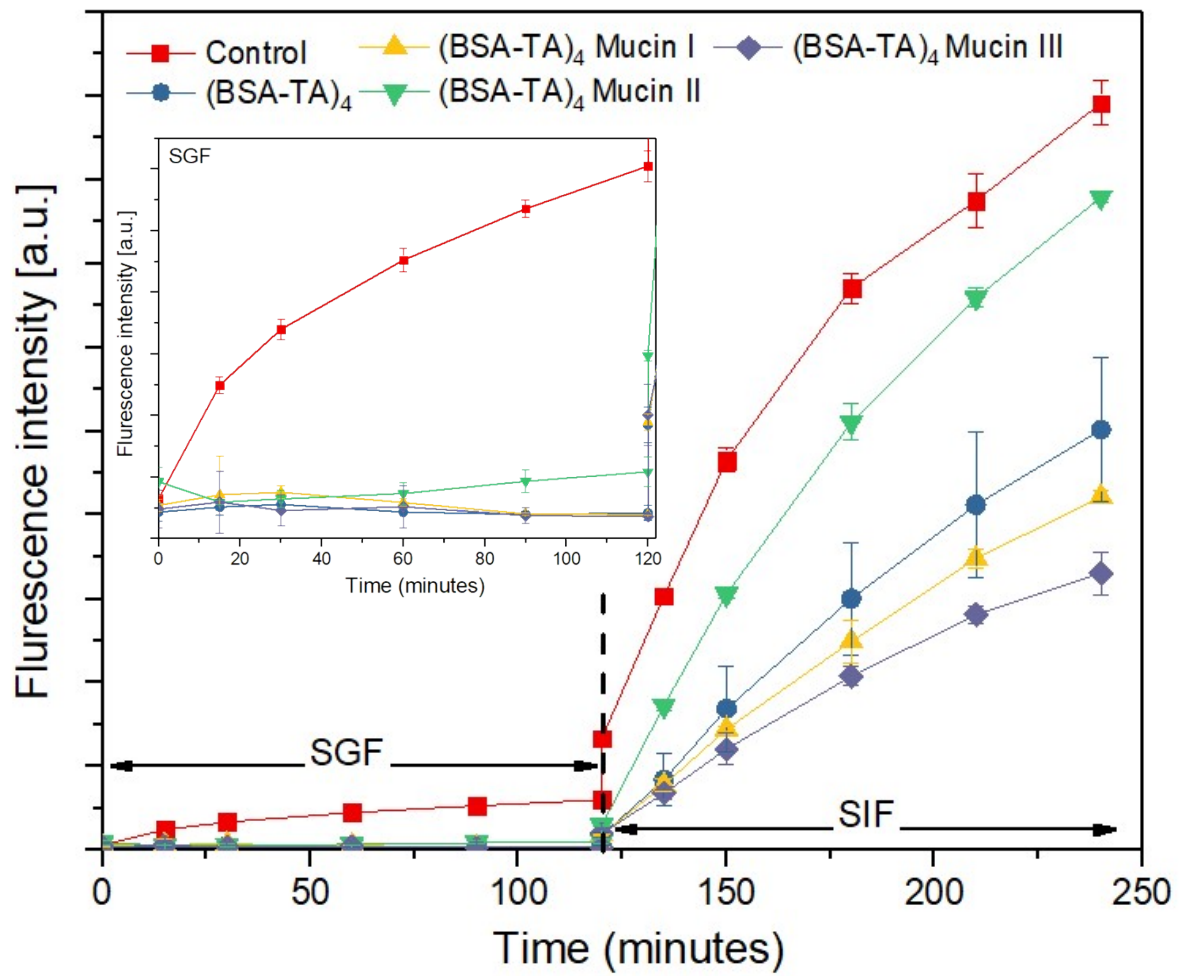


Figure S1. Fluorescence intensities with respect to digestion time in SGF followed by SIF of control free DQ™ Red BSA solution, DQ™ Red BSA encapsulated in (BSA-TA)₄ and (BSA-TA)₄ in Mucin Type I, II and III shells. Inset shows enlarge graph in SGF.

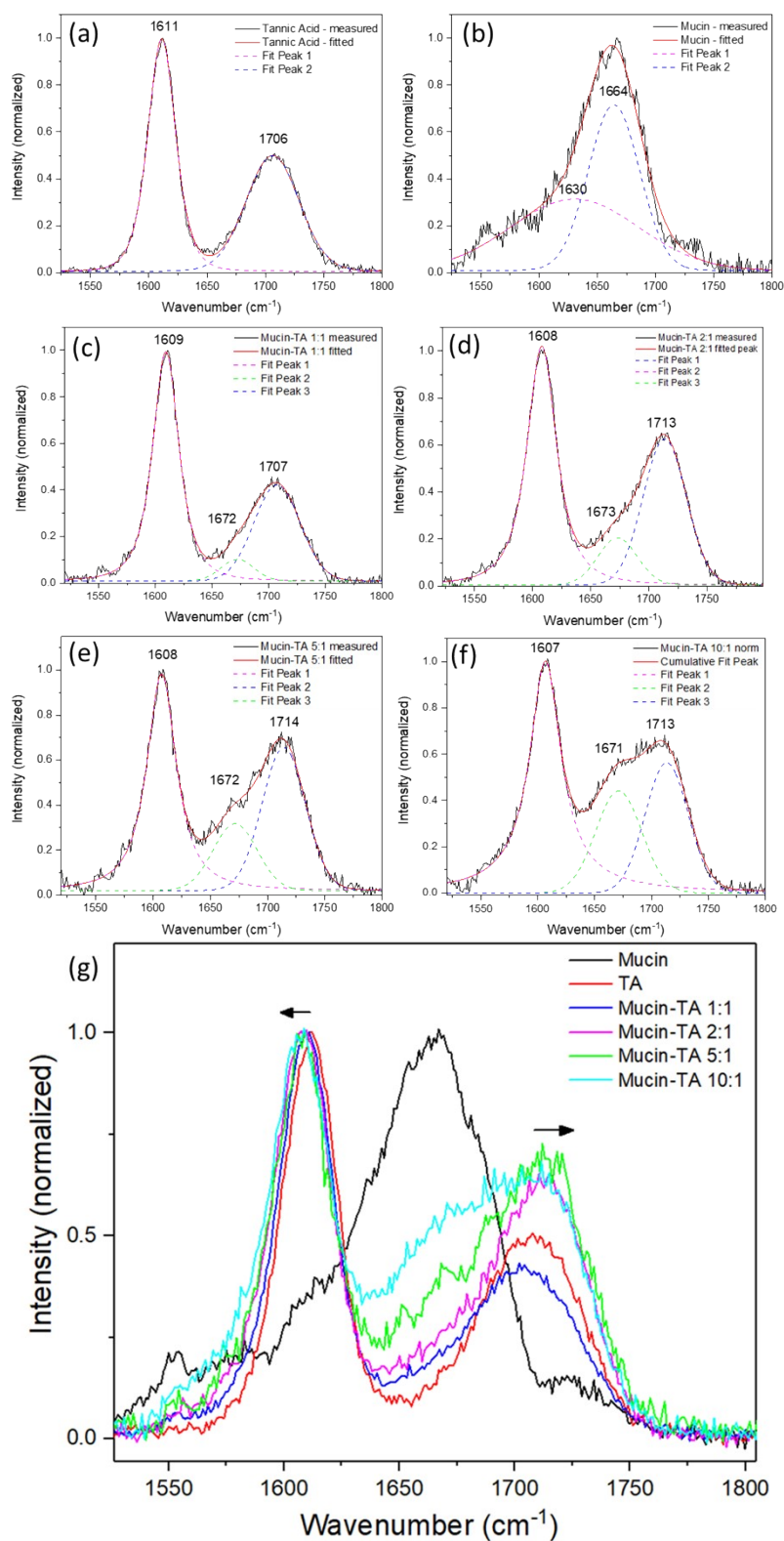


Figure S2. Raman peaks of (a) TA, (b) mucin, and mucin-TA complex at ratio (c) 1:1, (d) 2:1; (e) 5:1, (f) 10:1 and (g) Raman spectra.

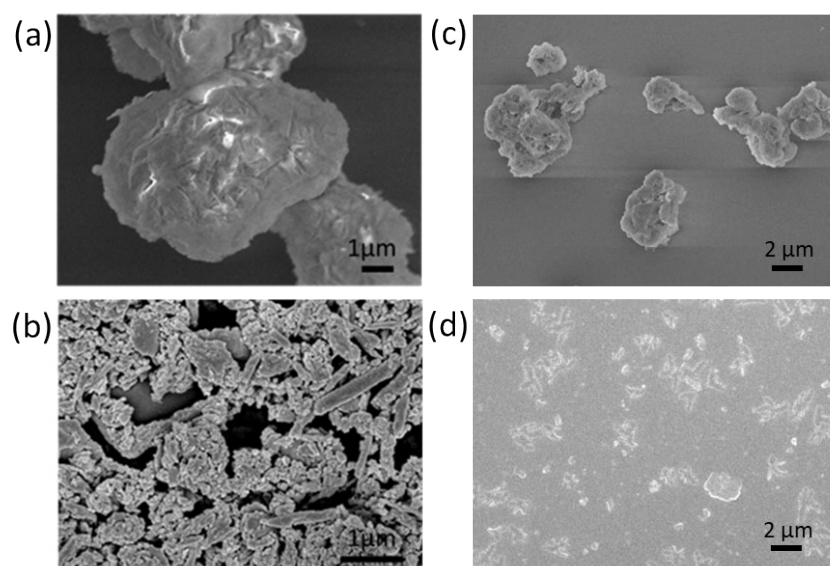


Figure S3. SEM of daidzein loaded FCC microparticles (a) before and (b) after ball milling and daidzein loaded (BSA-TA)₄-mucin microcarriers (c) before and (d) after ball milling.

Table S2. S-Equol measured of unprotected daidzein in colonic set-ups with donor fecal microbiota and *Slackia equolifaciens* by UPLC-MS.

Timepoints	Colonic System	Presence of S-Equol	Concentration of S-Equol (mM)
120h	<i>Slackia</i>	No	NA
120h	<i>Slackia</i> + Donor	Yes	0.058