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Supplementary Materials

Montmorillonite-Sodium Alginate Oral Colon-Targeting Microcapsule Design for WGX-50 Encapsulation and Controlled Release in Gastro-Intestinal Tract

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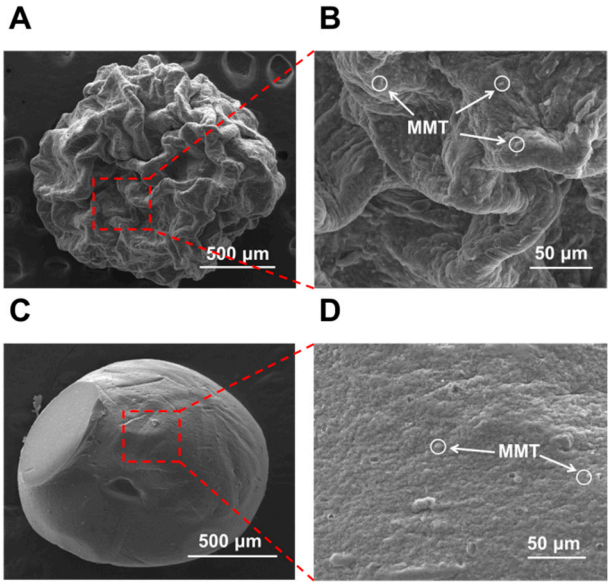

Figure S1. Freeze-dried microcapsules (**A–B**) and oven-dried microcapsules (**C–D**).

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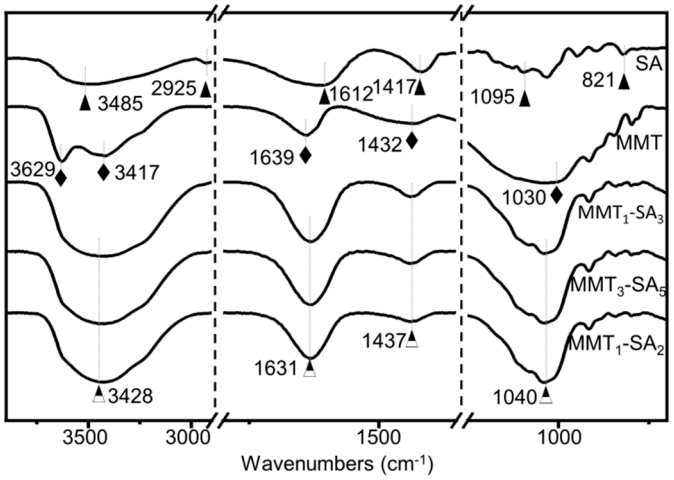

Figure S2. FTIR of SA, MMT, MMT_1-SA_3, MMT_3-SA_5 and MMT_1-SA_2 microcapsule.

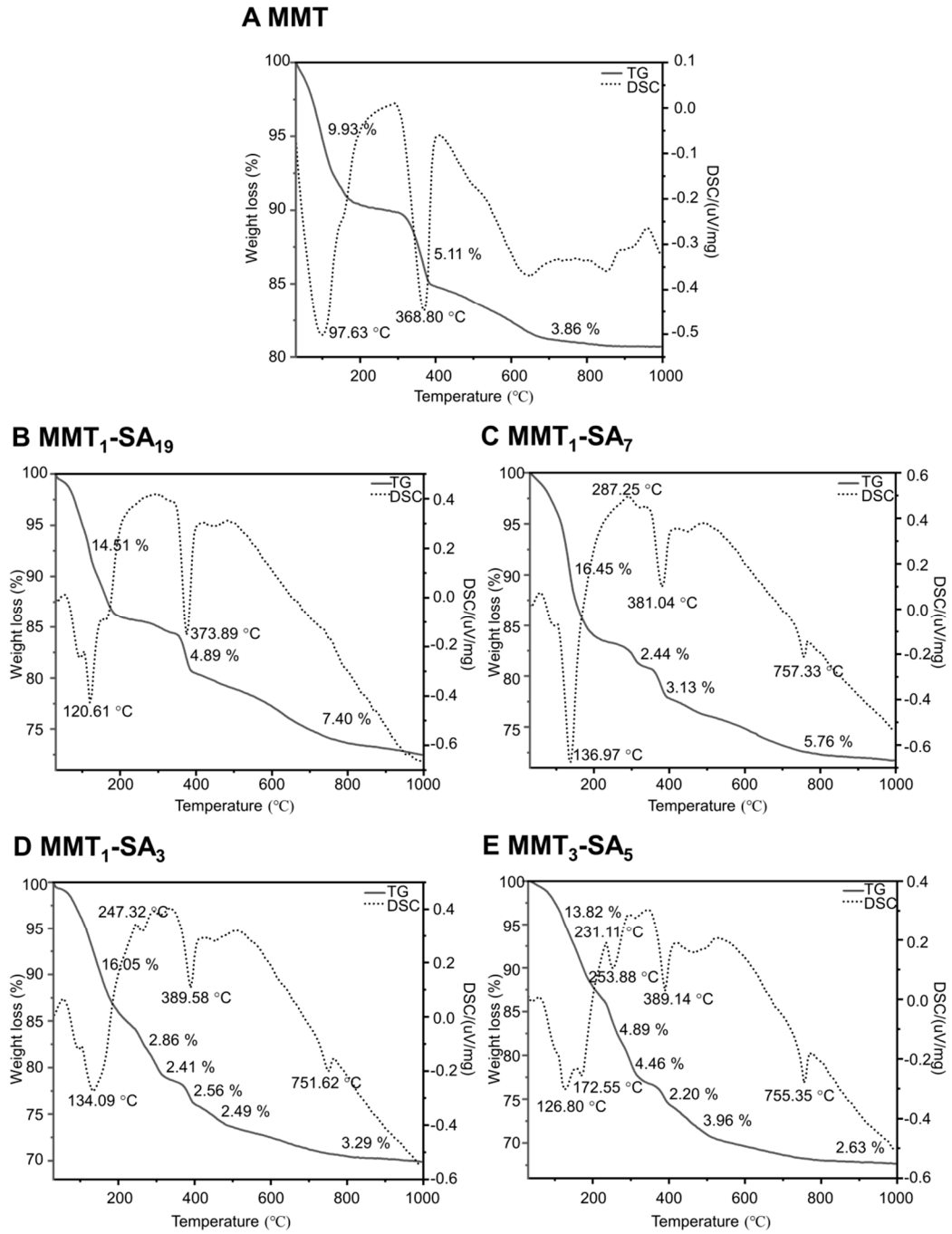

Figure S3. TG-DSC curves for (**A**) MMT, (**B**)MMT1-SA19, (**C**) MMT1-SA7 (**D**) MMT1-SA3 and (**E**) MMT3-SA5.

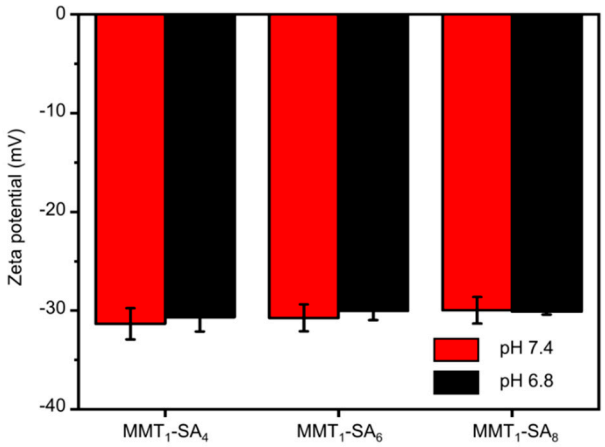

Figure S4. Zeta potentials of MMT_1-SA_4, MMT_1-SA_6, MMT_1-SA_8 in different pH.

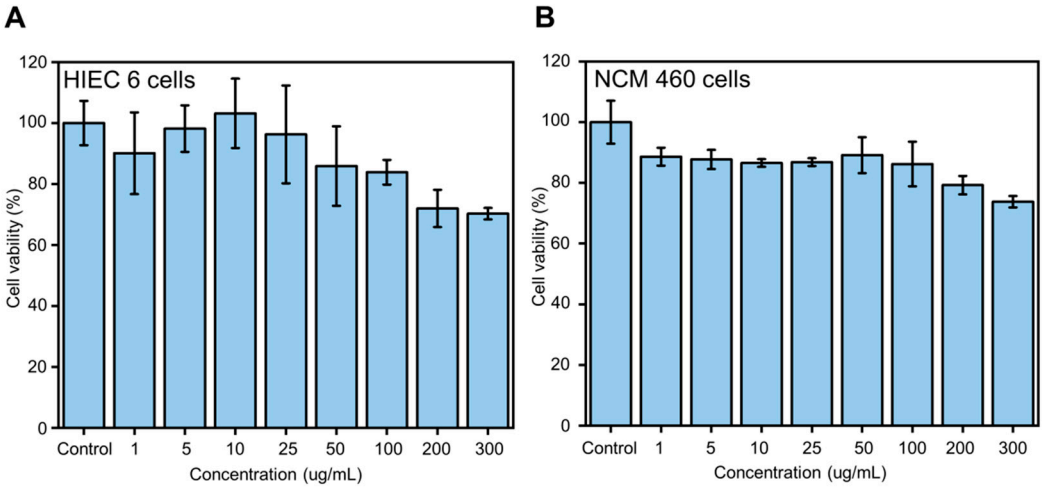

Figure S5. Cytotoxicity evaluation of MMT-SA to (**A**) HIEC-6 cells and (**B**) NCM-460 cells.

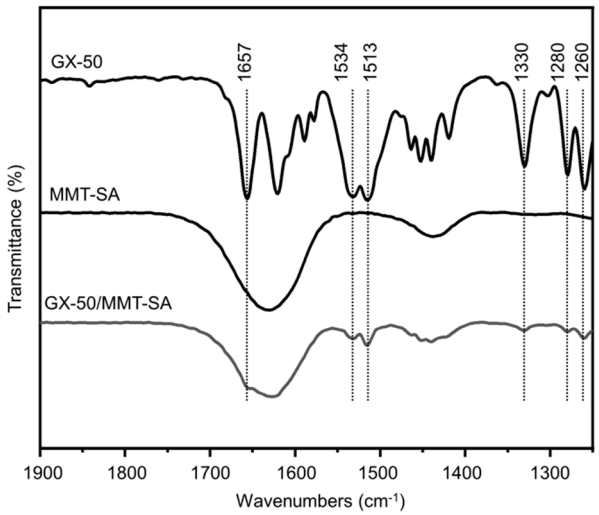

Figure S6. FTIR of WGX-50, MMT-SA and WGX-50/MMT-SA microcapsule.

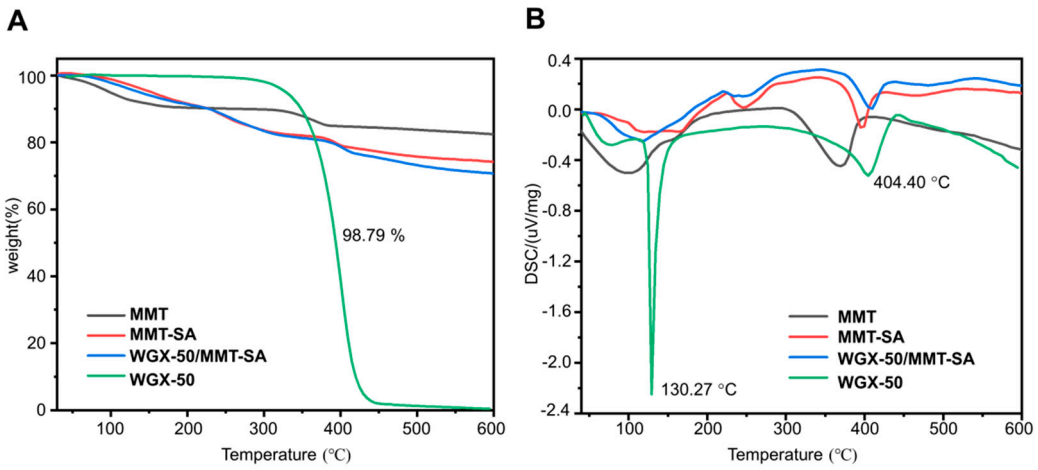

Figure S7. TG (**A**) and DSC (**B**) of MMT, MMT-SA, WGX-50 and WGX-50/MMT-SA microcapsule.

Table S1. The mixed mass ratios and labels of MMT-SA microcapsule.

Samples	Sodium Alginate(mg)	MMT(mg)
MTT	0	200
MMT_1-SA_{19}	10	190
MMT_1-SA_7	25	175
MMT_1-SA_3	50	150
MMT_3-SA_5	75	125
MMT_1-SA_2	75	150
MMT_1-SA_4	75	300
MMT_1-SA_6	75	450
MMT_1-SA_8	75	600

Table S2. In vitro release data of WGX-50.

Theoretical value of WGX-50 (mg)	WGX-50 Encapsulation (mg)	WGX-50/MMT-SA (mg)	EE (%)	SD	DL (%)	SD
25	24.81	435.8	99.25	1.25E-4	5.71	5.57E-4
50	49.80	493.5	99.60	1.38E-4	10.09	1.40E-3
100	99.62	497.2	99.62	9.65E-5	20.04	2.89E-3
200	199.34	634.43	99.67	2.31E-5	31.43	6.53E-3

Table S3. Fitting results of WGX-50 release kinetics parameters using different models at pH 1.2, 6.8 and 7.4.

Release condition	Zero-order		First-order		Higuchi		Korsmeyer-Peppas	
	R^2	k	R^2	k	R^2	k	R^2	n
pH 1.2	0.985	0.0321	0.978	5.540E-5	0.990	0.501	0.980	1.062
pH 6.8	0.917	0.0171	0.774	3.046E-6	0.941	5.122	0.881	1.580
pH 7.4	0.0255	4.210E-4	0.719	0.00857	0.0628	0.0404	0.122	0.013