pharmaceutics

MDPI

Folic acid-grafted chitosan-alginate nanocapsules as effective targeted nanocarriers for delivery of turmeric oil for breast cancer therapy

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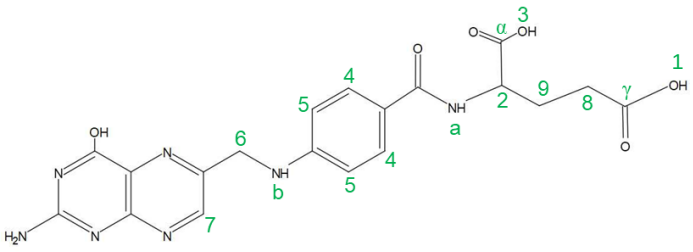
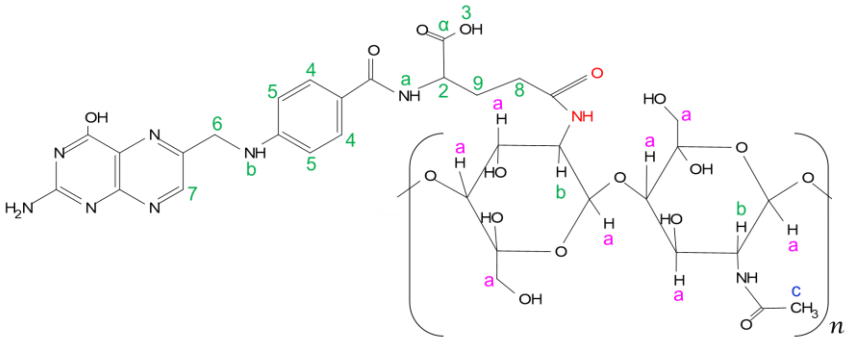


FA



FA-CS

Table S1. Assignment of ^{1}H-NMR spectral data of FA and FA-CS conjugate in DMSO-d_6

Position	^{1}H NMR Shift (ppm)	
	FA	FA-CS
NH (a)	8.13	-
NH (b), NH_2	6.93	6.90
1 -COOH	11.40	-
2	4.30	4.50
3 -COOH	12.30	10.60
4	7.66	7.63
5	6.60	6.66
6	4.50	4.46
7	8.60	8.65
8	2.30	2.30
9	2.14	2.14

Table S2. Summary of the regression analyses of the responses.

Response	Suggested model	*p*-value, overall model	*p*-value, lack-of-fit	R^2	Adjusted R^2	Predicted R^2	Adequate precision
Y_1	Quadratic	< 0.0001	0.5347	0.9894	0.9787	0.9220	34.6723
Y_2	2FI	< 0.0001	0.2620	0.9885	0.9820	0.9635	44.0165
Y_3	Quadratic	< 0.0001	0.1039	0.9930	0.9859	0.9641	38.5856

Table S3. Release kinetics of TO from TO-FA-CS-Alg-NCs

Model	Media	Parameter	R^2 adjusted	AIC	MSC
Zero order ($F = k_0 \cdot t$)	pH 5.5	$k_0 = 2.976$	-0.7961	90.1318	-0.9216
	pH 7.4	$k_0 = 3.633$	-0.3075	93.3060	-0.4488
First order ($F = 100 \cdot e^{-k_1 t}$)	pH 5.5	$k_1 = 0.053$	0.0774	82.8555	-0.2601
	pH 7.4	$k_1 = 0.075$	0.5321	81.9675	0.5820
Higuchi ($F = k_H \cdot t^{0.5}$)	pH 5.5	$k_H = 12.116$	0.6697	71.6241	0.7609
	pH 7.4	$k_H = 14.603$	0.7513	75.0397	1.2118
[a]Korsmeyer-Peppas ($F = k_{KP} \cdot t^n$)	pH 5.5	$k_{KP} = 17.166$, $n = 0.345$	0.7879	67.3280	1.1515
	pH 7.4	$k_{KP} = 18.819$, $n = 0.387$	0.7863	74.2195	1.2863
Hixson-Crowell ($F = 100 \cdot [1 - (1 - k_{HC} \cdot t)^3]$)	pH 5.5	$k_{HC} = 0.015$	-0.1687	85.4417	-0.4952
	pH 7.4	$k_{HC} = 0.021$	0.34170	85.7354	0.2394

[a]Best-fit release kinetics model for TO-FA-CS-Alg-NCs. F is the fraction (%) of drug released at time t; k_0 is the zero-order release constant; k_1 is the first-order release constant; k_H is the Higuchi release constant; k_{KP} is the release constant incorporating structural and geometric characteristics of the drug-dosage form; n is the diffusional exponent indicating the drug-release mechanism; k_{HC} is the Hixson-Crowell release constant.

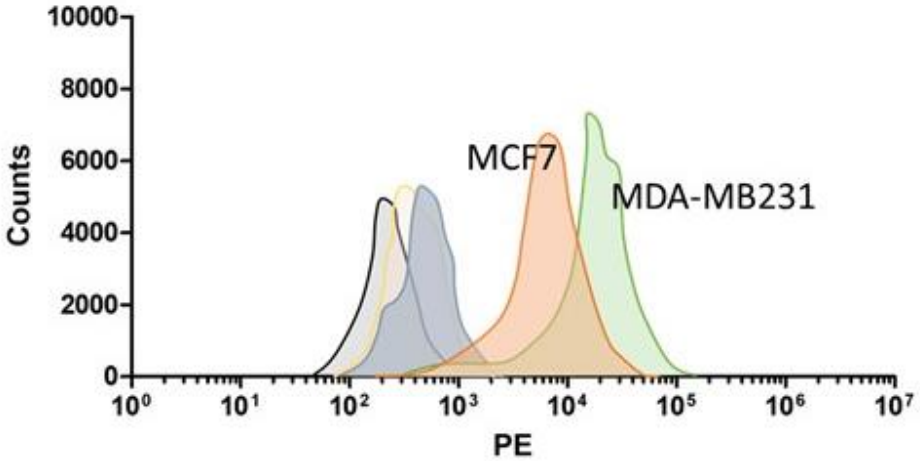


Figure. S1 Folate expression levels in MDA-MB-231 and MCF-7 cell lines