Engineering Docetaxel Loaded Micelles for Non-Small Cell Lung Cancer: A Comparative Study of Microfluidic and Bulk Nanoparticle Preparation

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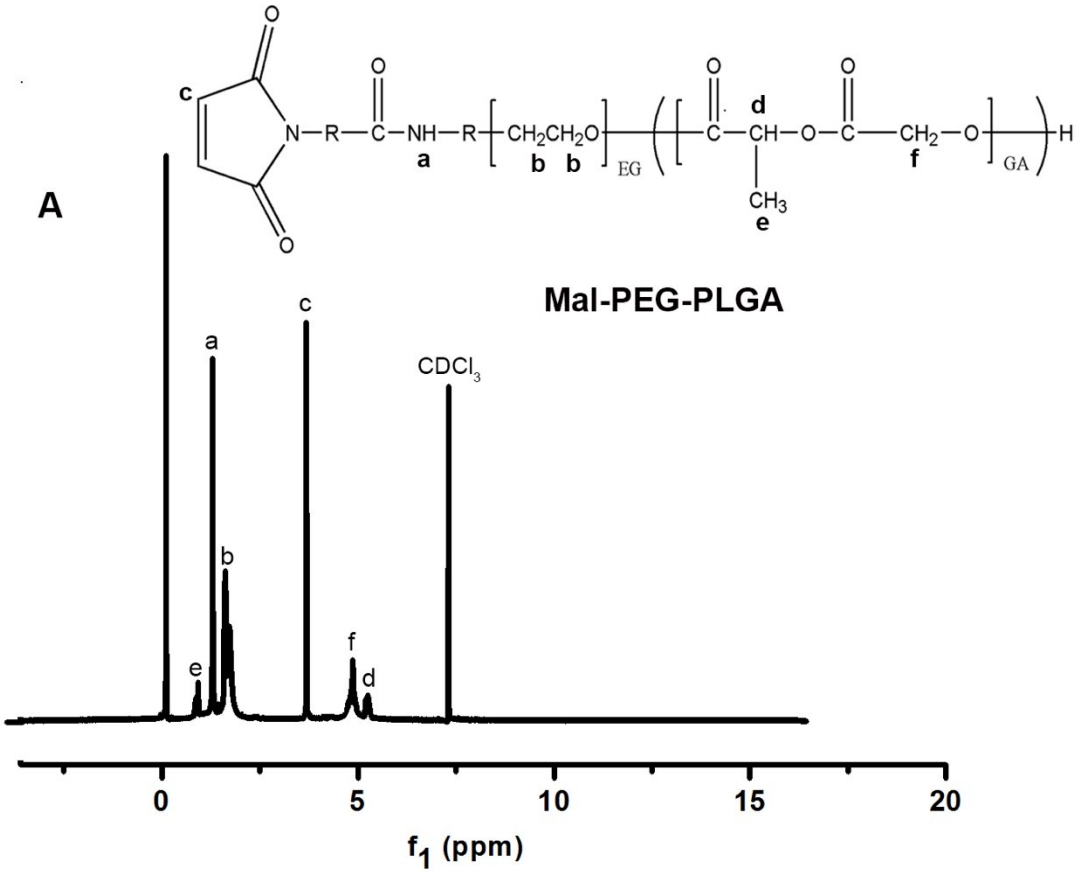
Weight ratio	**Drug loading(%)**	**Drug Encapsulation(%)**
20:4 (polymer / docetaxel)	precipitation	/
20:2 (polymer / docetaxel)	precipitation	/
10:4 (polymer / docetaxel)	13.6%	36%
10:2 (polymer / docetaxel)	11.7%	67%
10:1 (polymer / docetaxel)	5.2%	45%

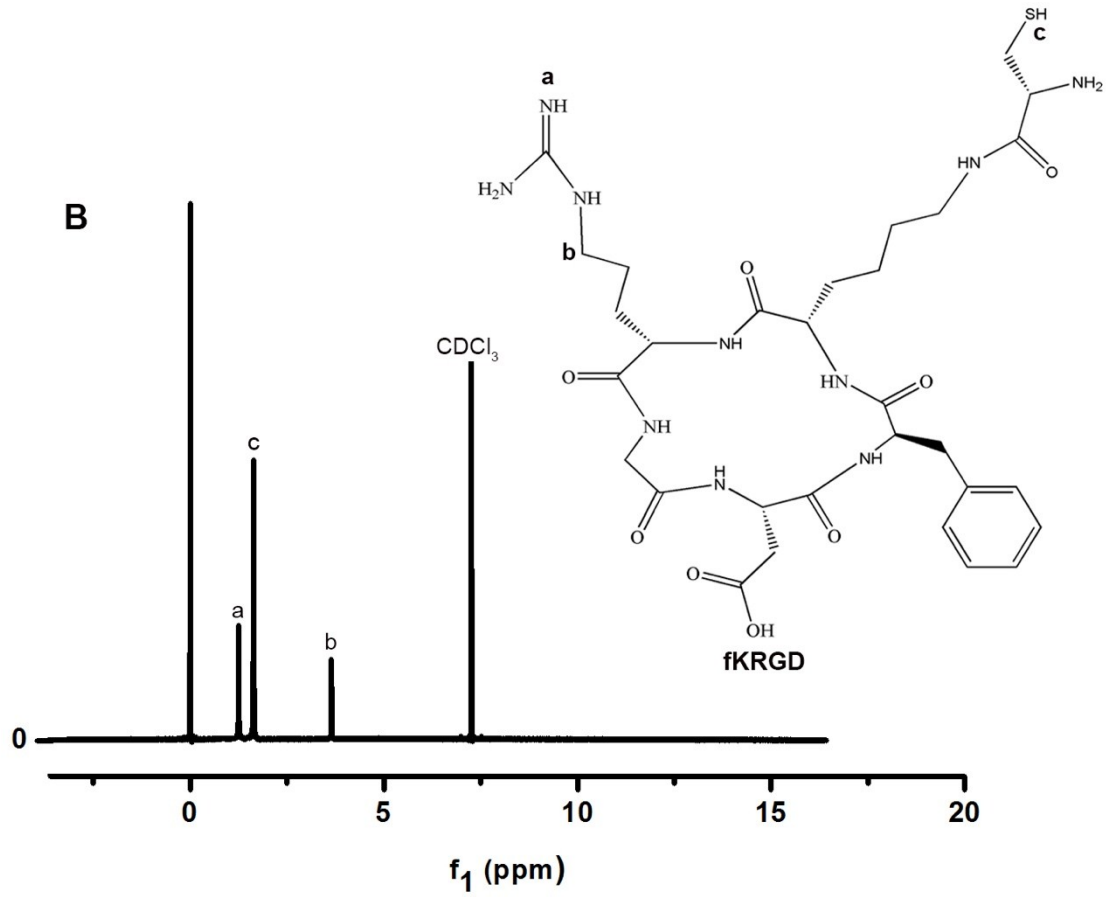
Supplementary table.1 The mass ratio of the polymer to docetaxel, and the respective drug loading rate

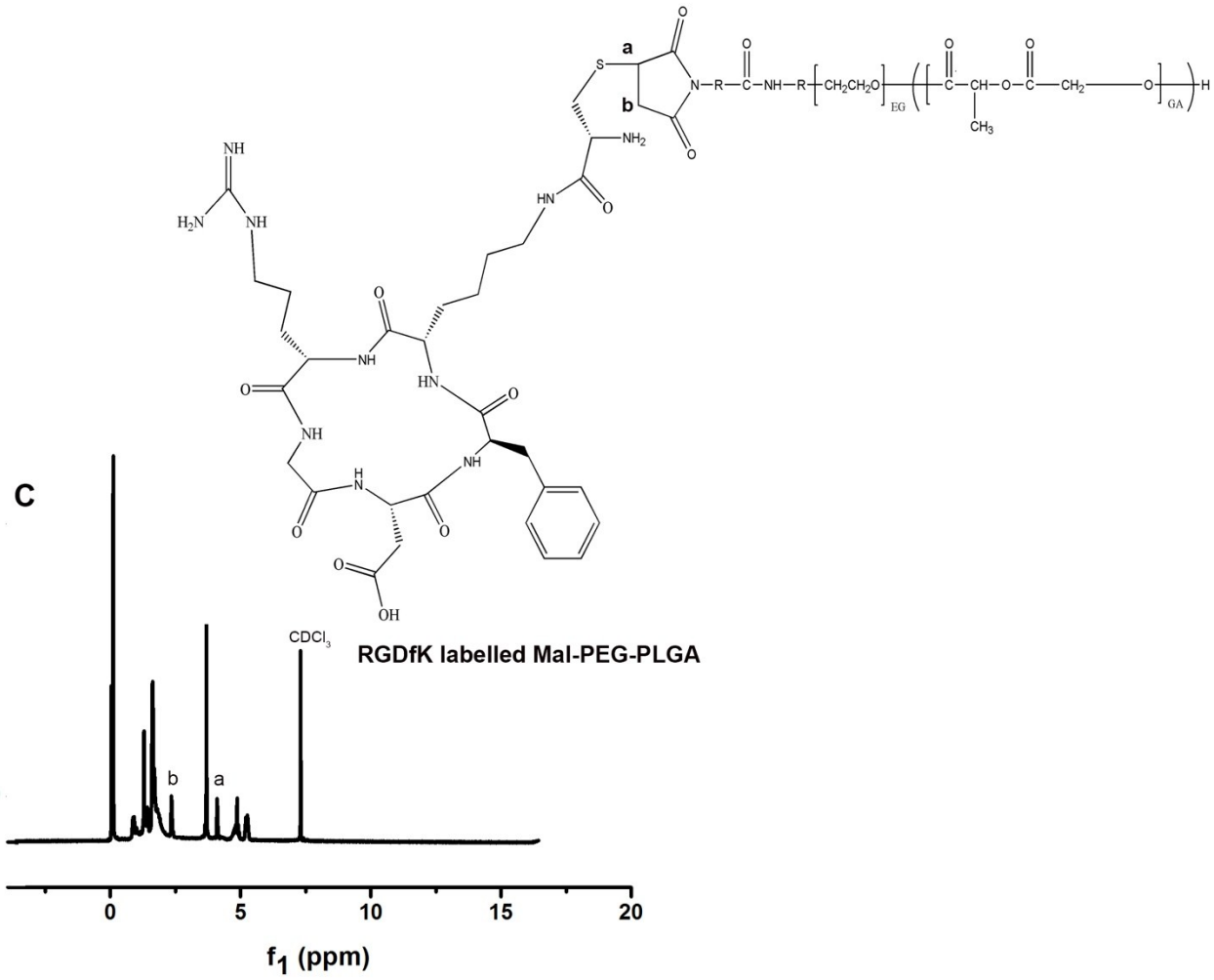
Organic phase	Secondary water phase	Flow ratio	Average particle size (nm)
50 μL/min	400 μL/min	1:8	100~102 nm
40 μL/min	400 μL/min	1:10	100~102 nm
50 μL/min	380 μL/min	1: 7.6	95~100 nm
40 μL/min	380 μL/min	1: 9.5	95~100nm

50μL/min	360μL/min	1:7.2	85~90 nm
40μL/min	360μL/min	1:9	74~79 nm
30μL/min	360μL/min	1:12	80~90nm
40μL/min	340 μL/min	1:8.5	90~95 nm
30μL/min	340 μL/min	1: 11.3	89~95 nm

Supplementary table.2 The flow rate of the organic phase and the aqueous phase in microfluidic technology.



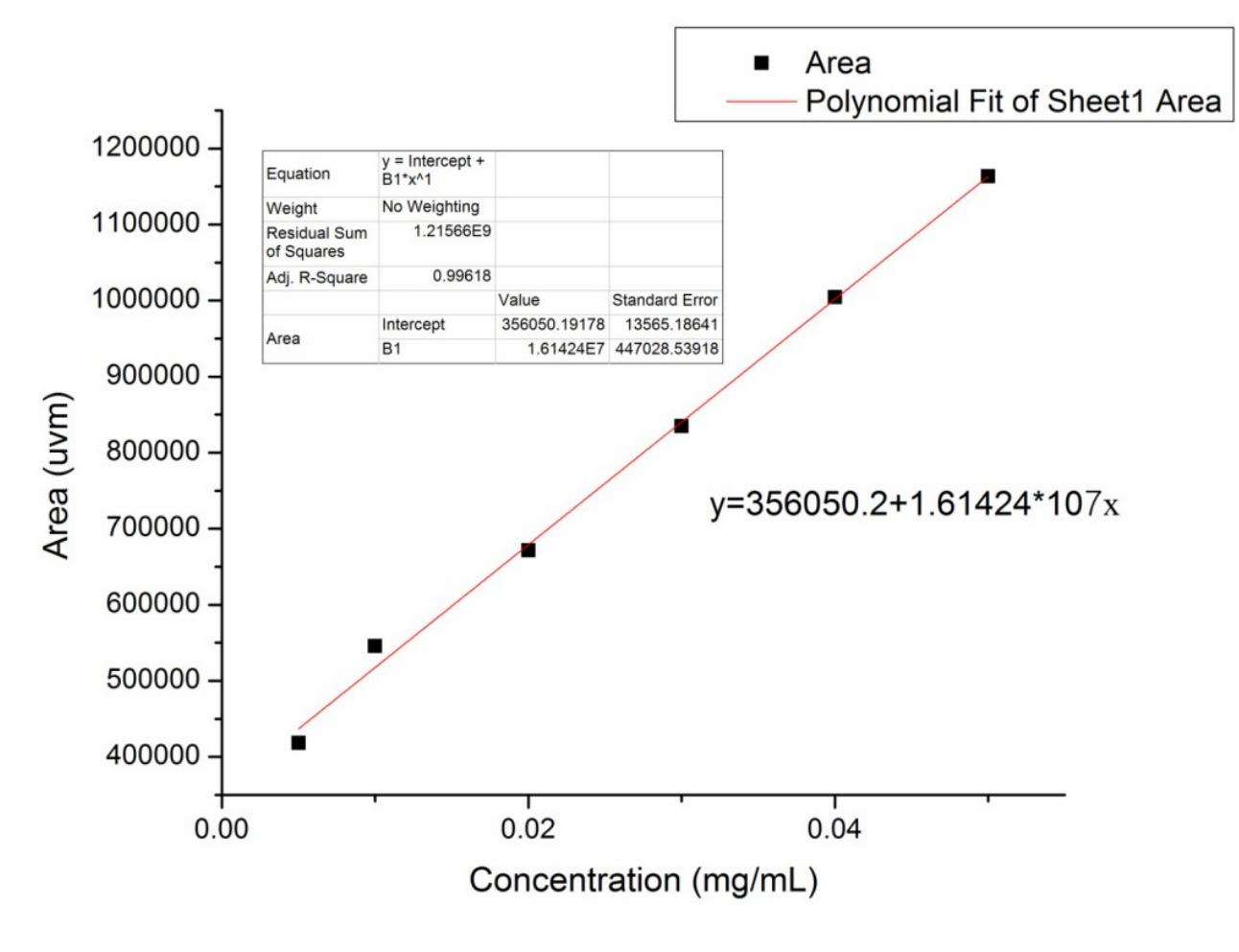

B
a
NH
H_2N
NH
b
SH
c
NH_2
HN
O
O
NH
O
HN
O
NH
NH
H
N
O
O
O
O
OH
fKRGD
$CDCl_3$
c
a
b
0
0
5
10
15
20
f_1 (ppm)



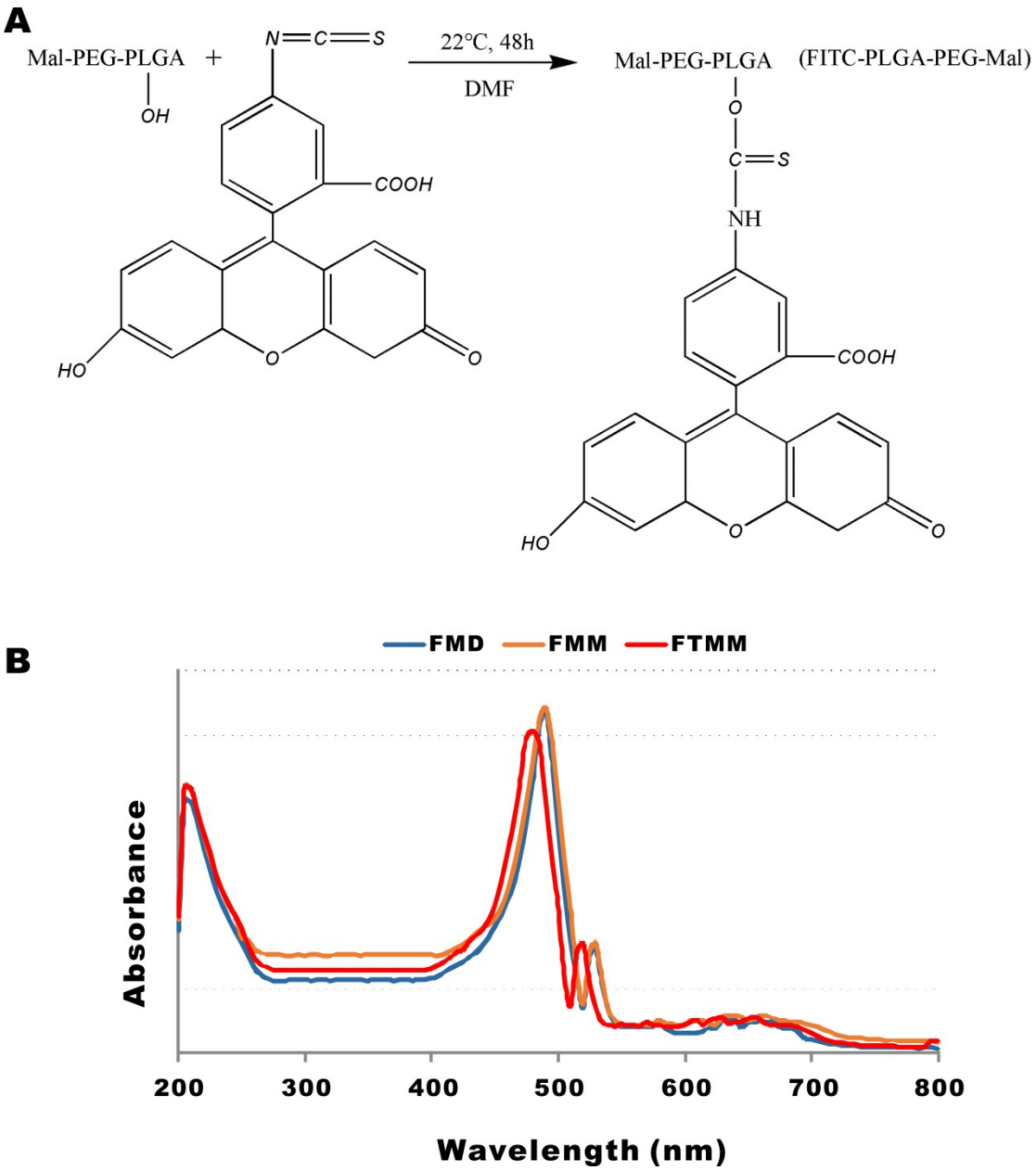
Supplementary figure 1 ^{1}H NMR spectrum

Notes: (A) ^{1}H NMR spectra of Mal-PEG-PLGA in $CDCl_3$. (B)^{1}H NMR spectra of fKRGD in $CDCl_3$. (C) ^{1}H NMR spectra of fKRGD-labelled Mal-PEG-PLGA in $CDCl_3$.

Abbreviations: Nuclear Magnetic Resonance, NMR

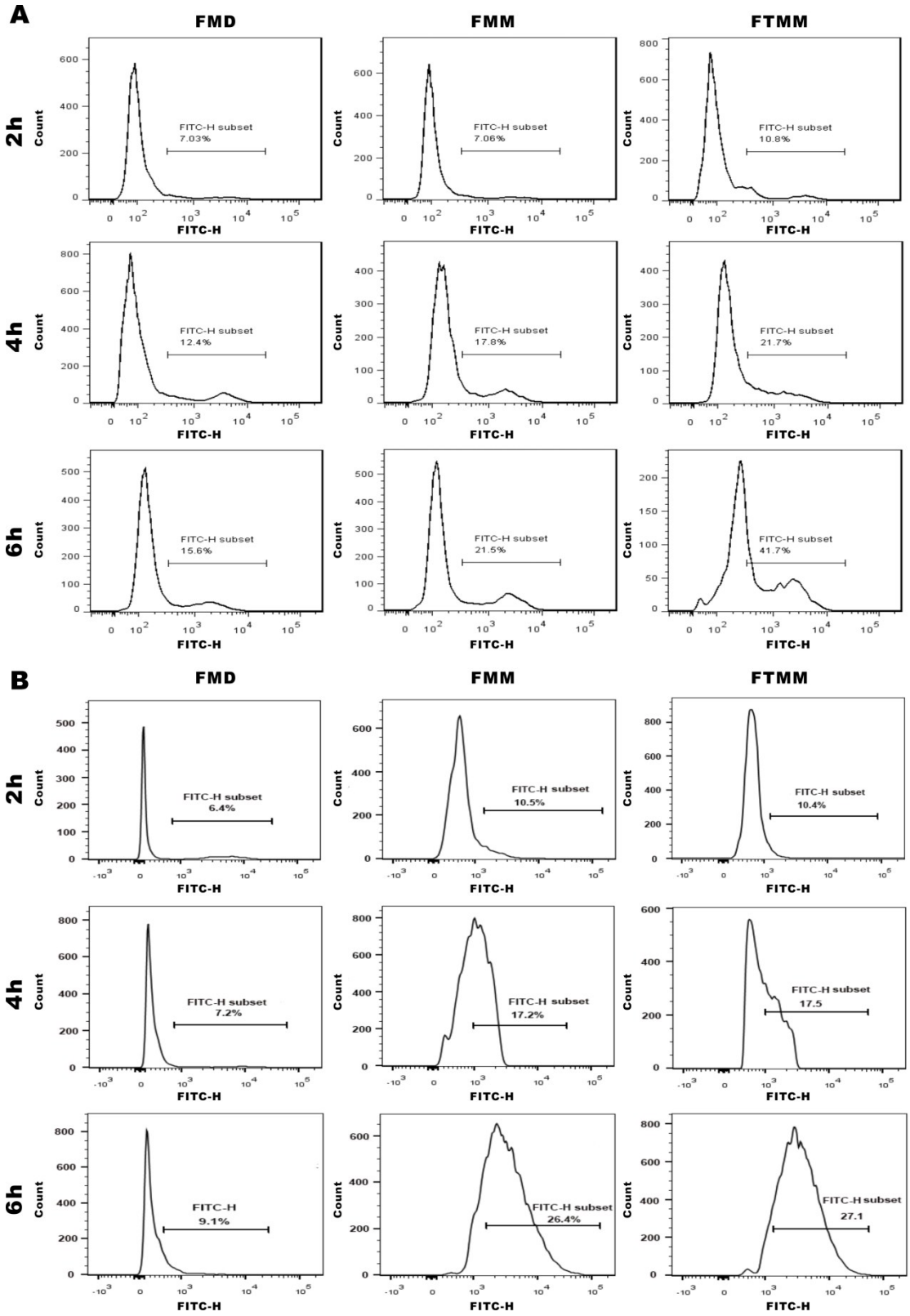


Supplementary figure 2 Calculation formula of docetaxel loading rate and encapsulation rate.



Supplementary figure 3 The chemistry of the FITC-PLGA-PEG-Mal preparation and the UV spectra of FMD, FMM, FTMM.
Notes: (A) Chemistry preparation of the FITC-PLGA-PEG-Mal. (B) The UV spectra of FMD, FMM, FTMM.

Abbreviations: FITC, fluorescein isothiocyanate; FMD, FITC-labeled micelles by dialysis; FMM, FITC-labeled micelles by microfluidics; FTMM, FITC-labeled targeting micelles by microfluidics.



Supplementary figure 4 The phagocytic rate of different FITC-labeled micelles examined at 2, 4, 6 h in A549 and 3LL. (A) A549 cell. (B) 3LL cell. Each data point represents the mean ± SD of three tests.

Abbreviations: FITC, fluorescein isothiocyanate; SD, standard deviation.