（Supplementary information）

Enzyme/pH-Sensitive nanoparticles based on Poly (β-L-malic acid) for drug delivery with enhanced endocytosis

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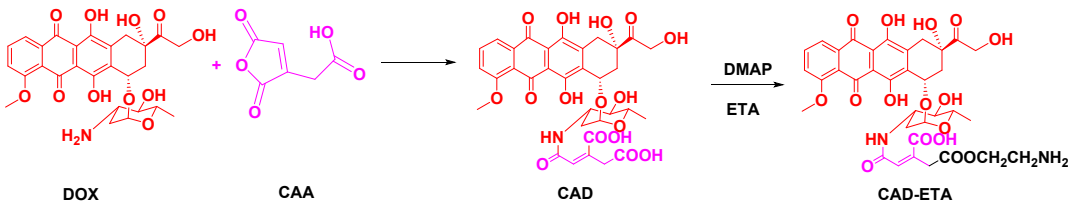
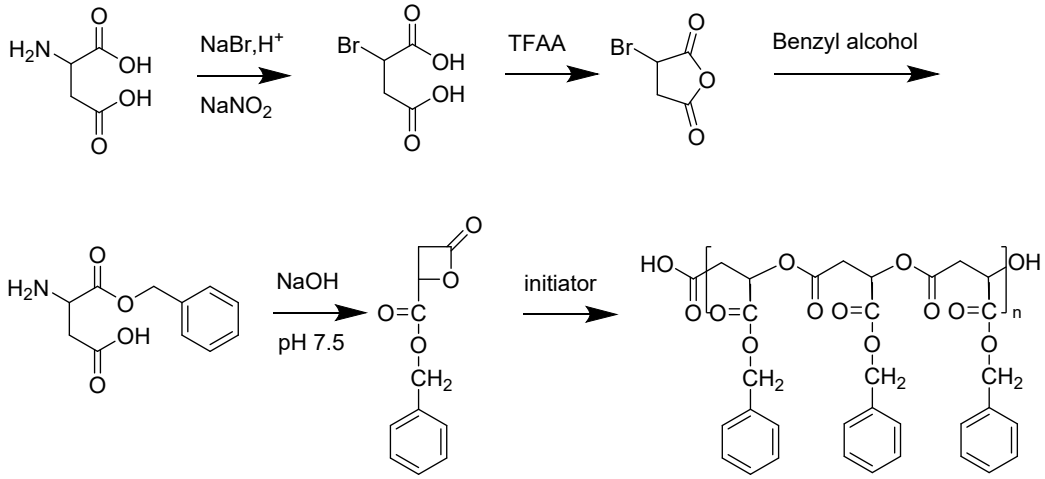
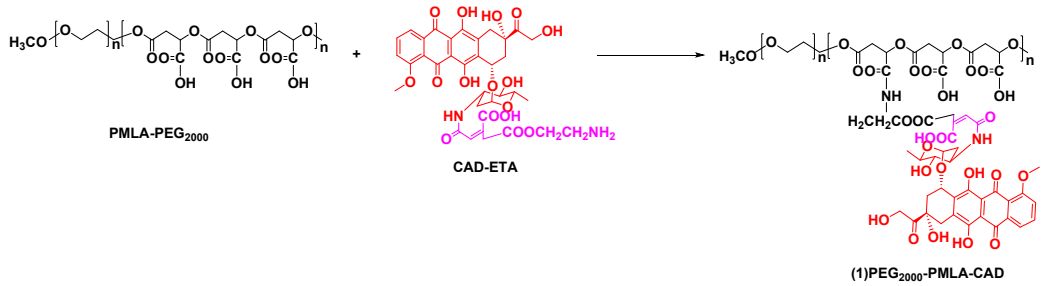


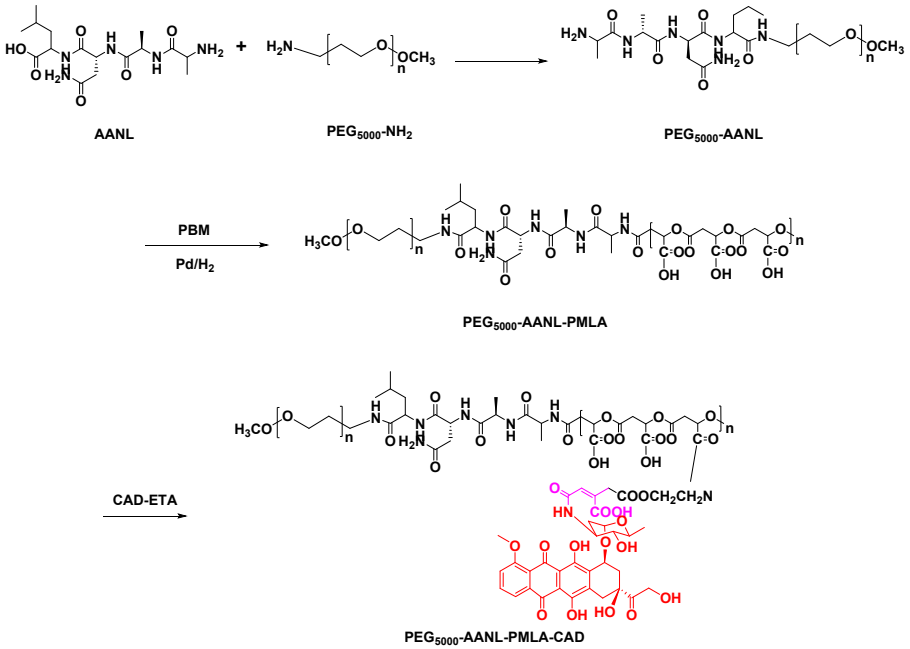
Scheme. S1 Synthesized of CAD and CAD-ETA



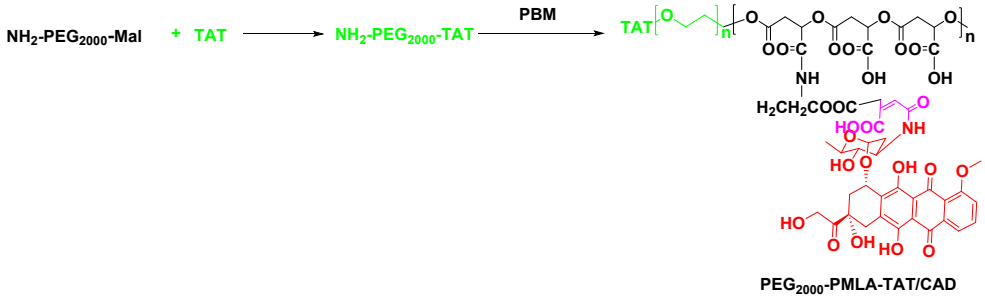
Scheme. S2 Synthesized of PBM



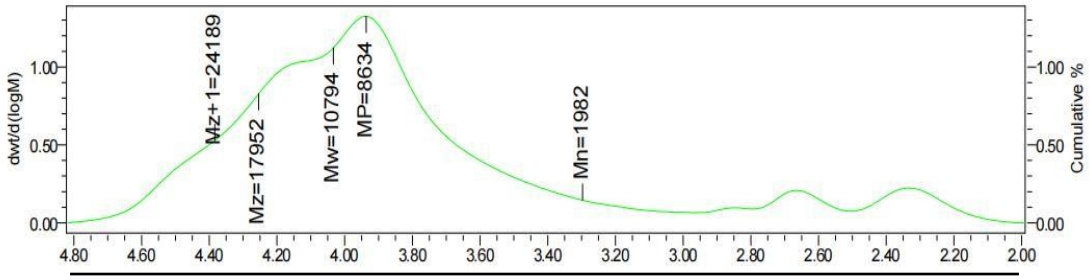
Scheme. S3 Synthesized of PPC



Scheme. S4 Synthesized of PAPC



Scheme. S5 Synthesized of PPTC



Mn (Da)	Mw (Da)	Mp (Da)	Mz (Da)	Mz+1 (Da)
1982	10794	8634	17952	24189

Fig. S1 The GPC chromatography of PMLA.

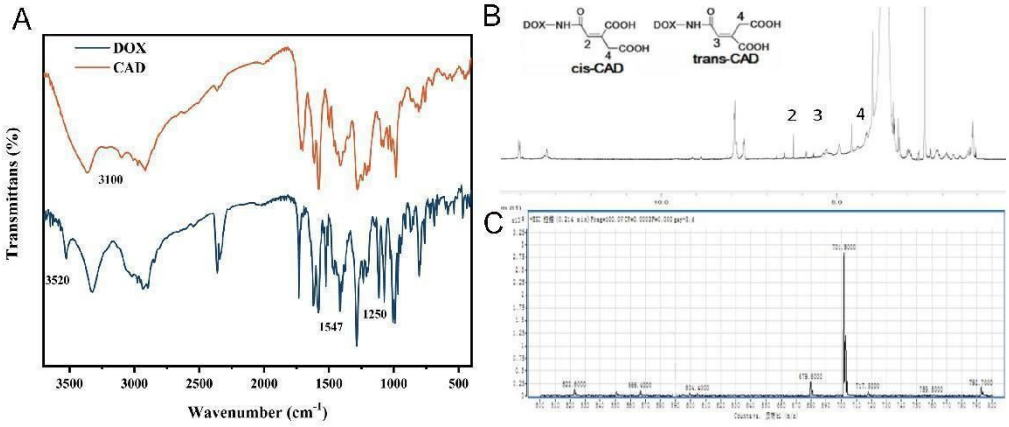


Fig. S2 FTIR (A), ^{1}H NMR (400 MHz) (B) and MS(C) spectrum of CAD

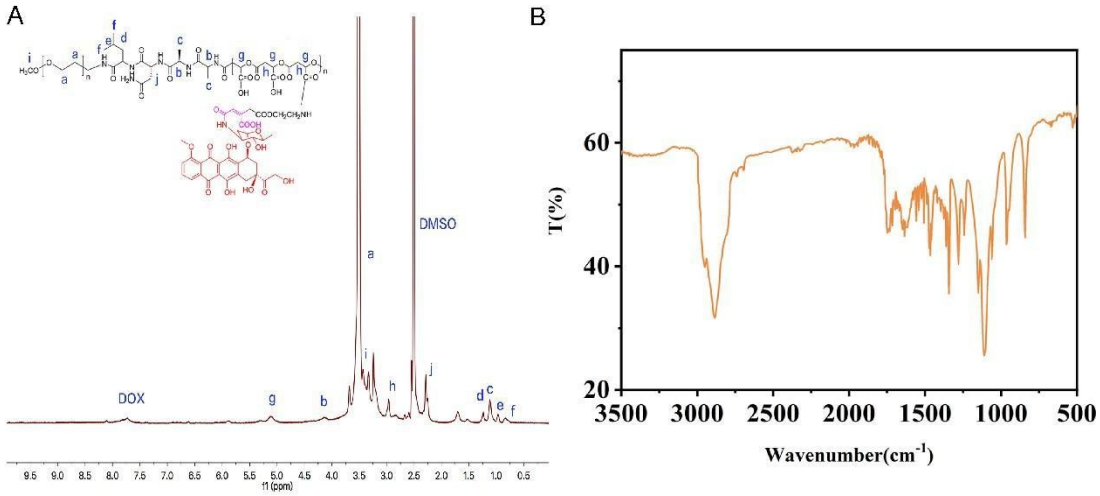


Fig. S3 ^{1}H-NMR (400 MHz) (A) and FTIR(B) spectrum of PEG-AANL-PMLA-CAD(PAPC)

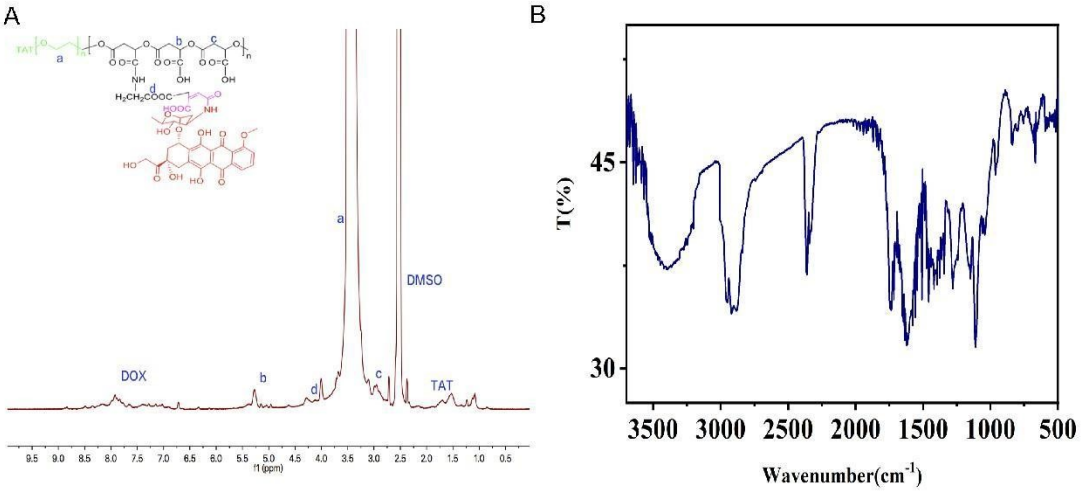


Fig. S4 [1]H-NMR (400 MHz) (A) and FTIR (B) spectrum of TAT-PEG-PMLA-CAD (PPTC)

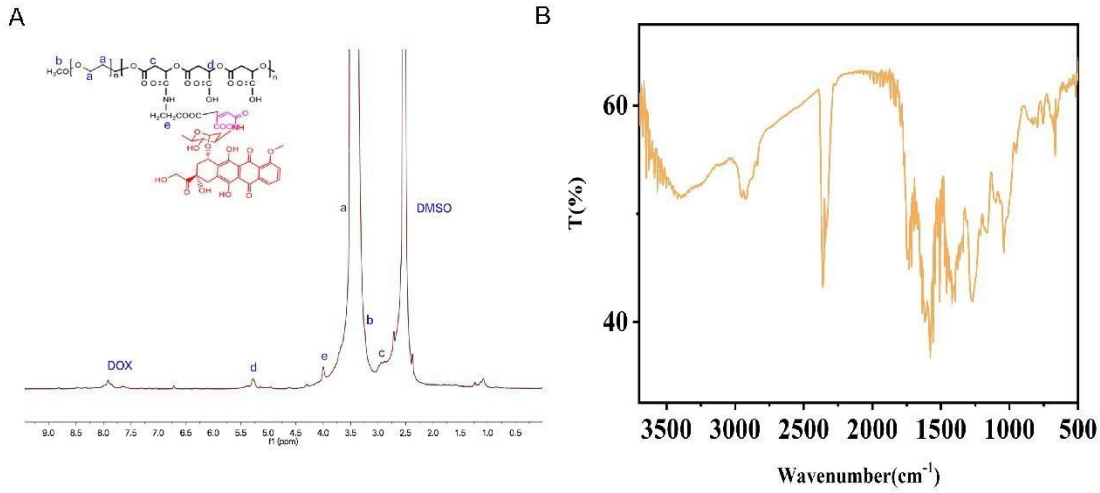


Fig. S5 [1]H-NMR (400 MHz) (A) and FTIR(B) spectrum of PEG-PMLA-CAD(PPC)

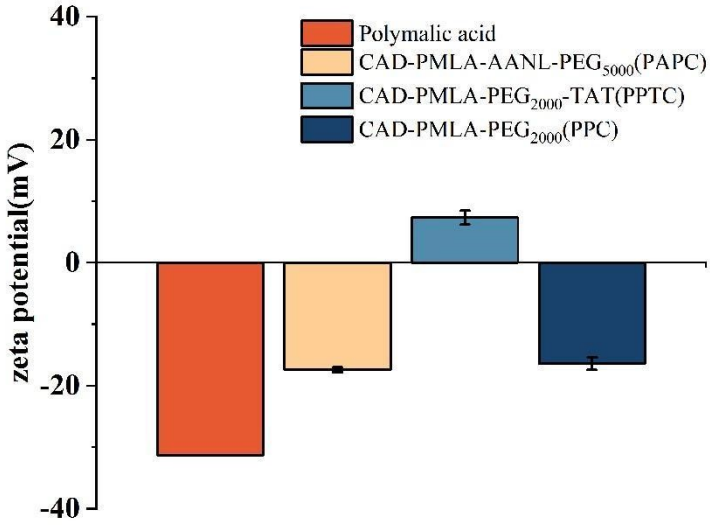


Fig. S6 The zeta potential of different DOX-loaded nanomaterials

Table. S1 Summary of size, Zeta-potential, PDI, and DOX drug content of EP-NPs, P-NPs, E-NPs and C-NPs.

Nanoparticles	Size (nm)	PDI*	Zeta-potential (mV)	DOX content (wt.%)
EP-NPs	129.7±3.5	0.19	-17.63±1.06	25.3
P-NPs	116.9±2.6	0.12	-16.89±0.63	24.2
E-NPs	143.1±3.2	0.19	-16.65±1.51	21.6
C-NPs	132.0±4.2	0.17	-15.89±1.15	24.1

*PDI: Polydispersity Index.

Table. S2 Summary of IC50 value of Free DOX, EP-NPs, P-NPs, E-NPs and C-NPs against MDA-MB-231 cells and L929.

	MDA-MB-231 (μg/mL)		**L929 (μg/mL)**	
	IC50 (pH 7.4)	IC50 (pH 6.3)	IC50 (pH 7.4)	IC50 (pH 6.3)
Free-DOX	0.92	0.96	1.22	1.31
EP-NPs	27.52	1.08	31.22	9.12
P-NPs	27.43	4.03	33.54	9.97
E-NPs	27.99	17.24	36.21	10.16
C-NPs	29.15	19.13	34.11	16.22