

Supporting information

Butyrylcholinesterase Nanodepots with Enhanced Prophylactic and Therapeutic Performances for Acute Organophosphorus Poisoning Management

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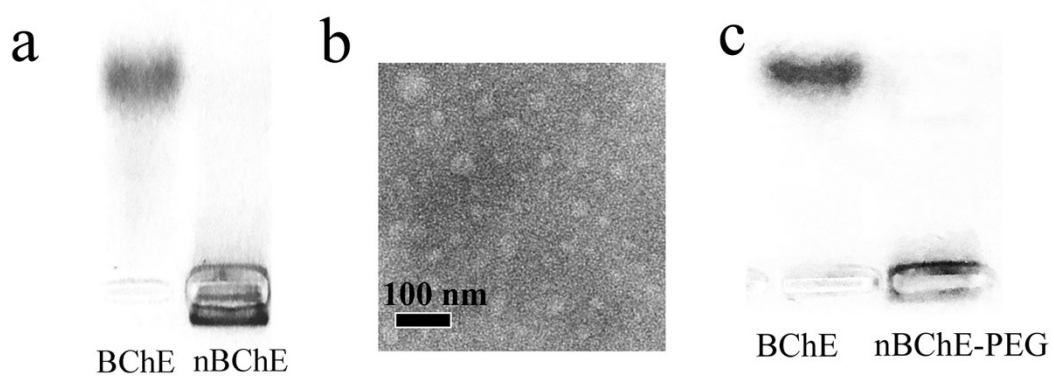


Figure S1 Characterization of BChE nanodepots. (a) Agarose electrophoresis of the native BChE and nBChE. (b) TEM image of nBChE-PEG. (c) Agarose electrophoresis of the native BChE and nBChE-PEG.

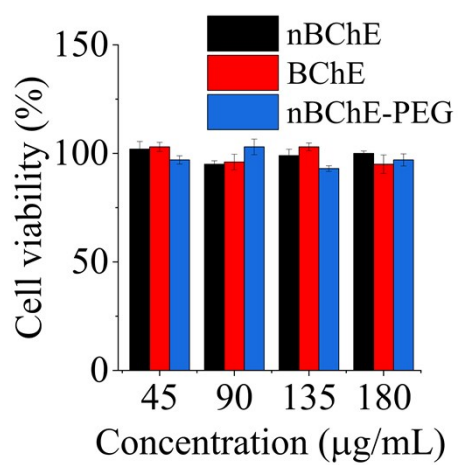


Figure S2 The viability of 4T1 cells after incubation with the native BChE, nBChE and nBChE-PEG for 24 h.

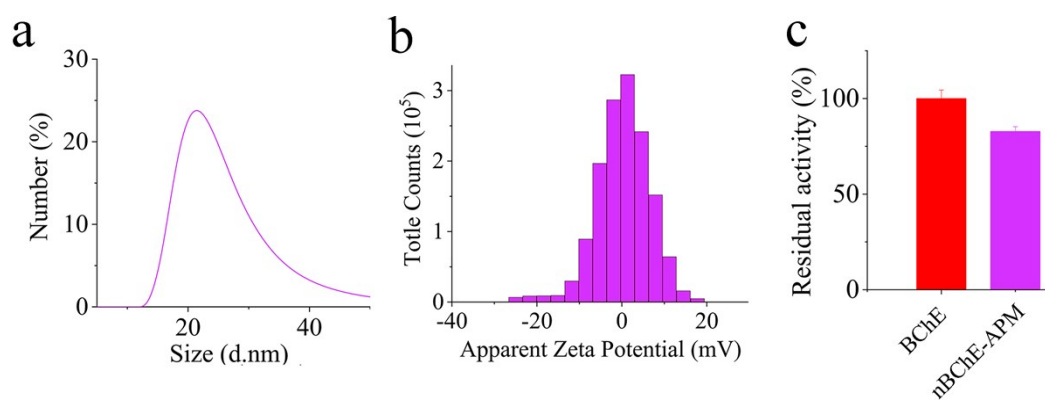


Figure S3 Characterization of nBChE-APM. (a) Size distribution and (b) zeta potential, measured by DLS. (c) Residual activity.

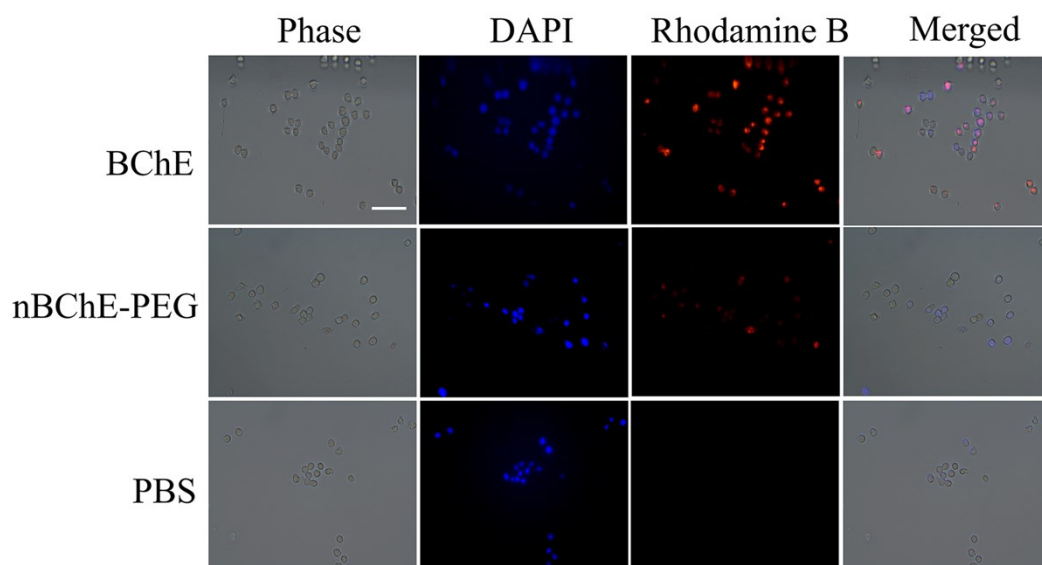


Figure S4 Fluorescence images of mouse macrophages (RAW 264.7) after co-incubating with the native BChE and nBChE-PEG for 4 h. PBS was used as blank control.

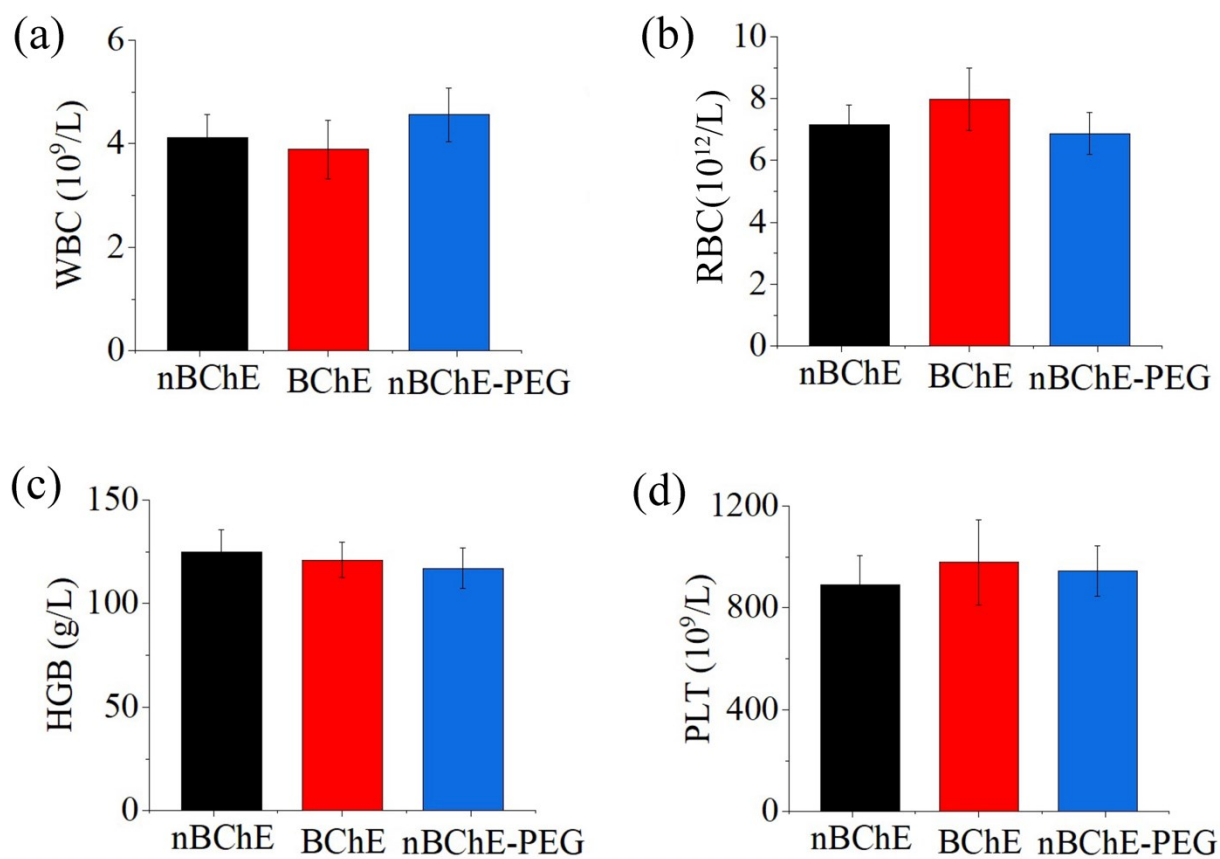


Figure S5 Blood routine examination in BALB/C mice. Complete blood samples were collected 7 days after intravenous injection of BChE, nBChE and nBChE-PEG. (a) White blood cells (WBC) counts. (b) Red blood cells (RBC) counts. (c) Concentration of hemoglobin (HGB). (d) Platelets (PLT). The data are shown as mean $\pm$ SD.

Table S1 PK parameters of native and modified BChE

	□	nBChE	BChE	nBChE-PEG
$t_{1/2, \beta}$	h	$210.7 \pm 12.9^*$	26.4 ± 4.1	121.6 ± 4.3
$AUC_{(0-t)}$	$\mu\text{g/mL} \times \text{h}$	481.3 ± 14.6	208.4 ± 8.5	420.1 ± 31.6
MRT	h	300.0 ± 17.1	37.6 ± 5.5	173.9 ± 6.2
CL	$(\mu\text{g})/(\mu\text{g/mL})/\text{h}$	0.0092 ± 0.0005	0.0691 ± 0.0018	0.0163 ± 0.0014

Note: $t_{1/2, \beta}$: half-lives of nBChE, BChE and nBChE-PEG post the initial intravenous injection; $AUC_{(0-t)}$:

: area under the curve; MRT: mean residence time; CL: clearance rate. Data represent means $\pm$ SD,

n = 5, one-way ANOVA, * $p < 0.05$.

Table S2 Reference intervals of blood routine index of female mice obtained from Lianhe Pet Hospital.

Parameters (unit)	Reference intervals
White blood cells ($10^9/\text{L}$)	3.6~6.8
Red blood cells ($10^{12}/\text{L}$)	6.4~9.4
Concentration of hemoglobin (g/L)	124~189
Platelets ($10^9/\text{L}$)	476~1611