



## Supporting Information

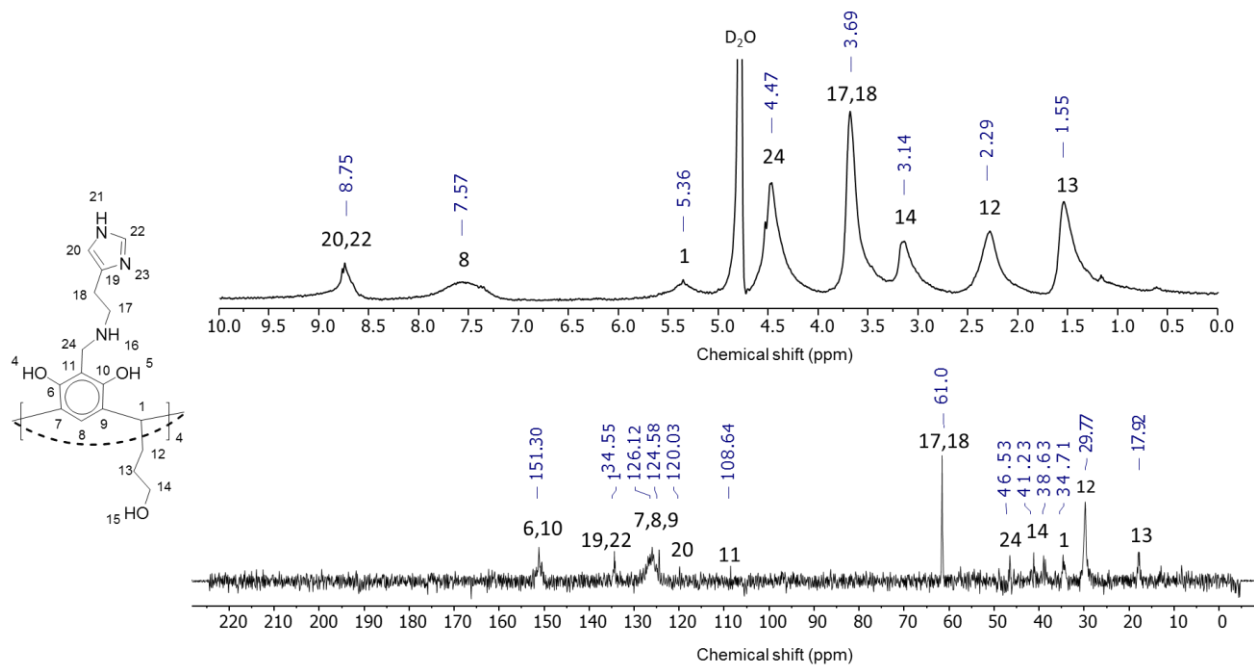
for

### **A nanocarrier containing carboxylic and histamine groups with dual action: acetylcholine hydrolysis and antidote atropine delivery**

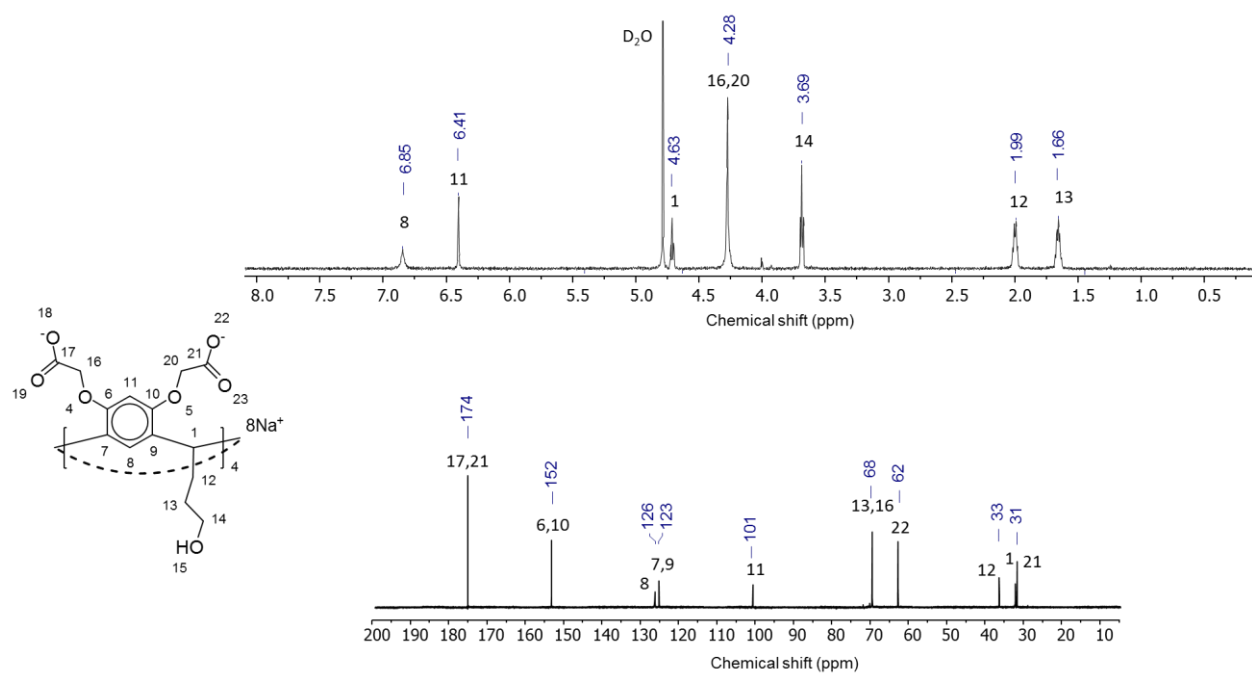
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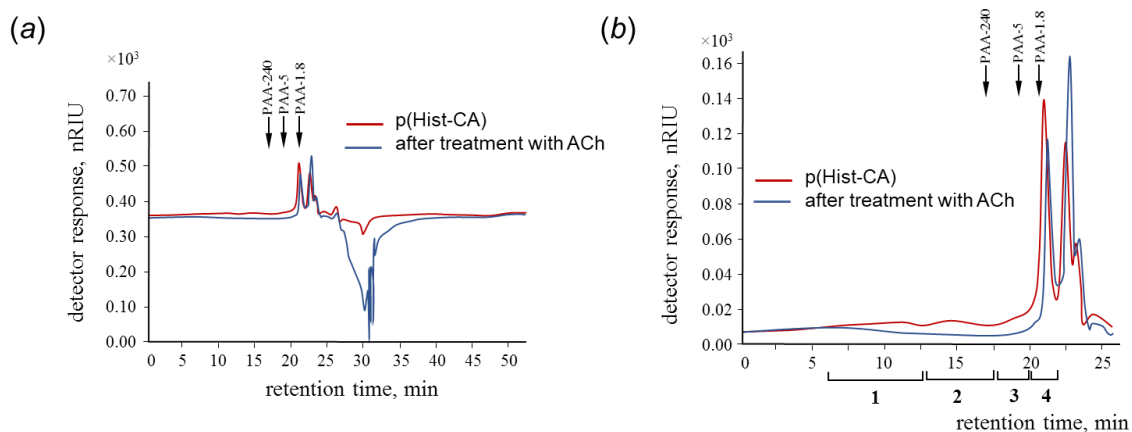
**$^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of Hist-RA and CA-RA; GPC data (molecular weight distribution); hemolytic activity of Hist-RA, CA-RA, and p(Hist-CA); DLS data of p(Hist-CA) before and after ACh addition; and the effects of CA-RA, Hist-RA, ACh, and AcOH on the fluorescence spectrum of FI**



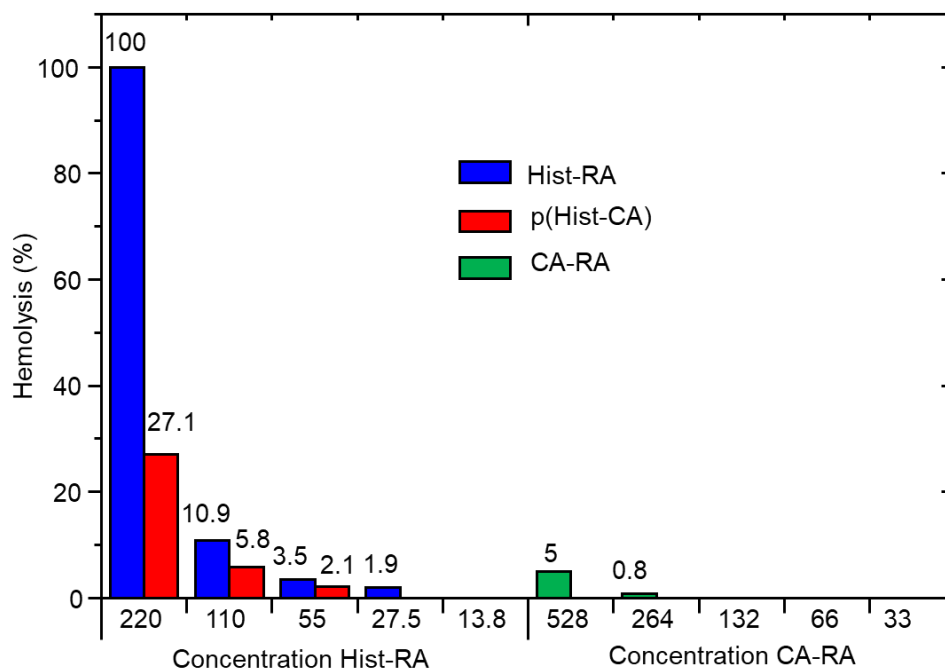
**Figure S1:**  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of Hist-RA in  $\text{D}_2\text{O}$ ,  $25^\circ\text{C}$ .



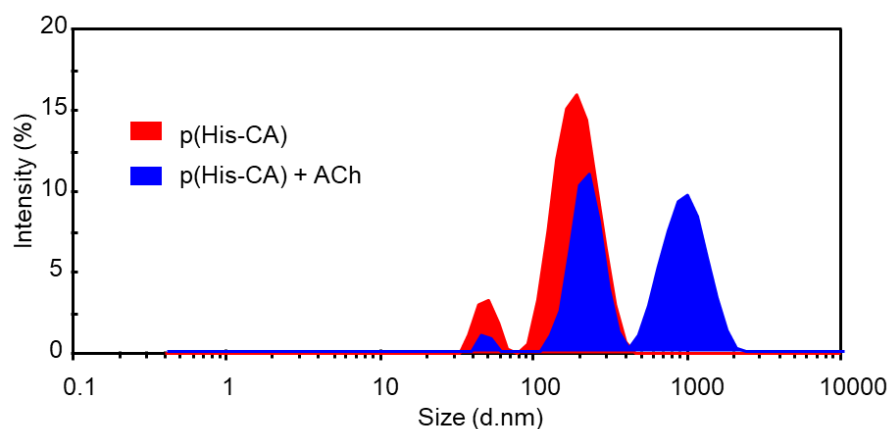
**Figure S2:**  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of CA-RA in  $\text{D}_2\text{O}$ ,  $25^\circ\text{C}$ .



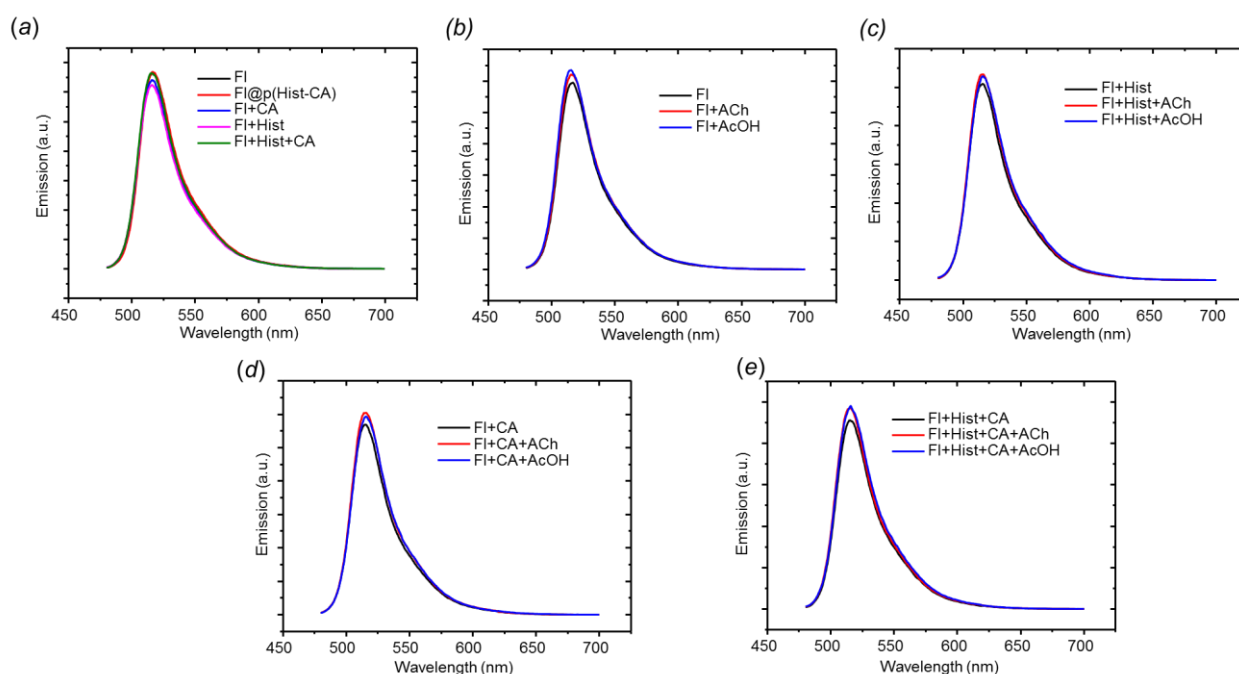
**Figure S3:** Molecular weight distribution of water-soluble portion of p(Hist-CA) before and after addition of ACh at separation on OHPak SB-806M HQ column. Combinations of peaks are indicated by brackets, (a) 50 min period, (b) 25 min period,  $C(\text{p(Hist-CA)}) = 1 \text{ mg/mL}$ ,  $C(\text{ACh}) = 4 \text{ mM}$ ,  $0.05 \text{ M K}_2\text{HPO}_4$ , pH 7.4.



**Figure S4:** The dependence of hemolysis (%) on the concentration of Hist-RA, CA-RA and p(Hist-CA).



**Figure S5:** Distribution diagrams of the hydrodynamic diameter of p(Hist-CA) before and after addition of ACh,  $C(\text{p(Hist-CA)}) = 1 \text{ mg/mL}$ ,  $C(\text{ACh}) = 4 \text{ mM}$ , PB pH 7.4, 25 °C.



**Figure S6:** Fluorescence spectra of (a) FI, FI@p(Hist-CA) and mixtures of FI + CA-RA, FI + Hist-RA, FI + Hist-RA + CA-RA, (b–e) systems before and after addition of ACh or AcOH: (b) FI, (c) FI + Hist-RA, (d) FI + CA-RA and (e) FI + Hist-RA + CA-RA,  $C(\text{FI}) = 0.01 \text{ mM}$ ;  $C(\text{Hist-RA}) = 0.05 \text{ mM}$ ,  $C(\text{CA-RA}) = 0.11 \text{ mM}$ ,  $C(\text{ACh}) = C(\text{AcOH}) = 1.6 \text{ mM}$ ; PB pH 7.4, 25 °C.