Electronic Supplementary Material (ESI) for RSC Advances.

Rational design of a lysosome-targeted fluorescence probes for monitoring the generation of hydroxyl radicals in ferroptosis pathways

Lili Zhong , [a, 1] Datian Fu， [b,1] Jin Xu, [c] Linyan Tan， [d] Haimei Wu,[e*]

[a] Department of Pharmacy, Hainan General Hospital (Hainan Affiliated Hospital of Hainan Medical University)， Haikou, Hainan, 570311, China.

[b] Department of Pharmacy，Hainan women and children's medical center，Haikou，Hainan，570312，China.

[c] Pharmaceutical and bioengineering school，Hunan Chemical Vocational Technology College，Zhuzhou，412006，China.

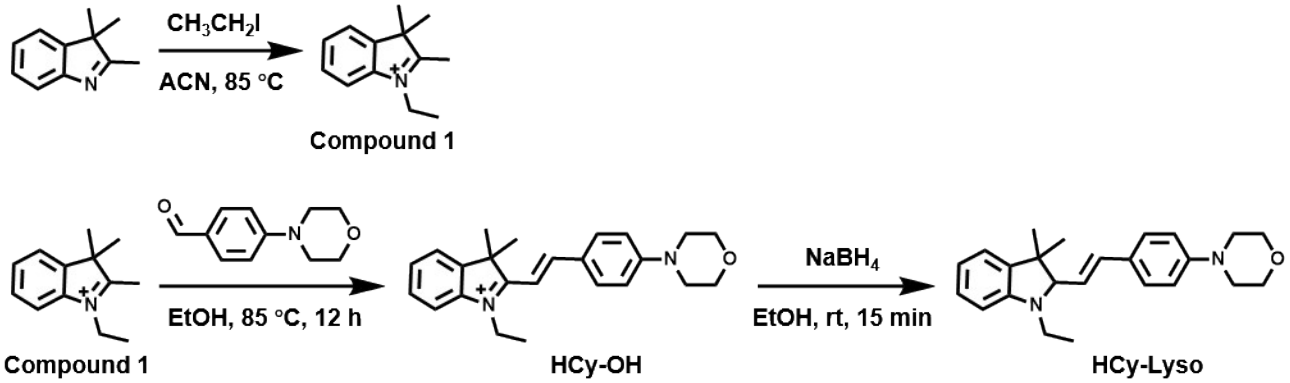
[d] Department of Pharmacy, Tropical Agricultural Technology College, Hainan Vocational University, Haikou，Hainan ,570216， China

[e] Department of Clinical Pharmacy, Hainan Cancer Hospital, Haikou, Hainan， 570100，China.

* Corresponding authors:

Haimei Wu, E-mail: wu634202863@126.com

[1] These authors contribute equally to this work.



Scheme S1. The synthesis route of HCy-Lyso.

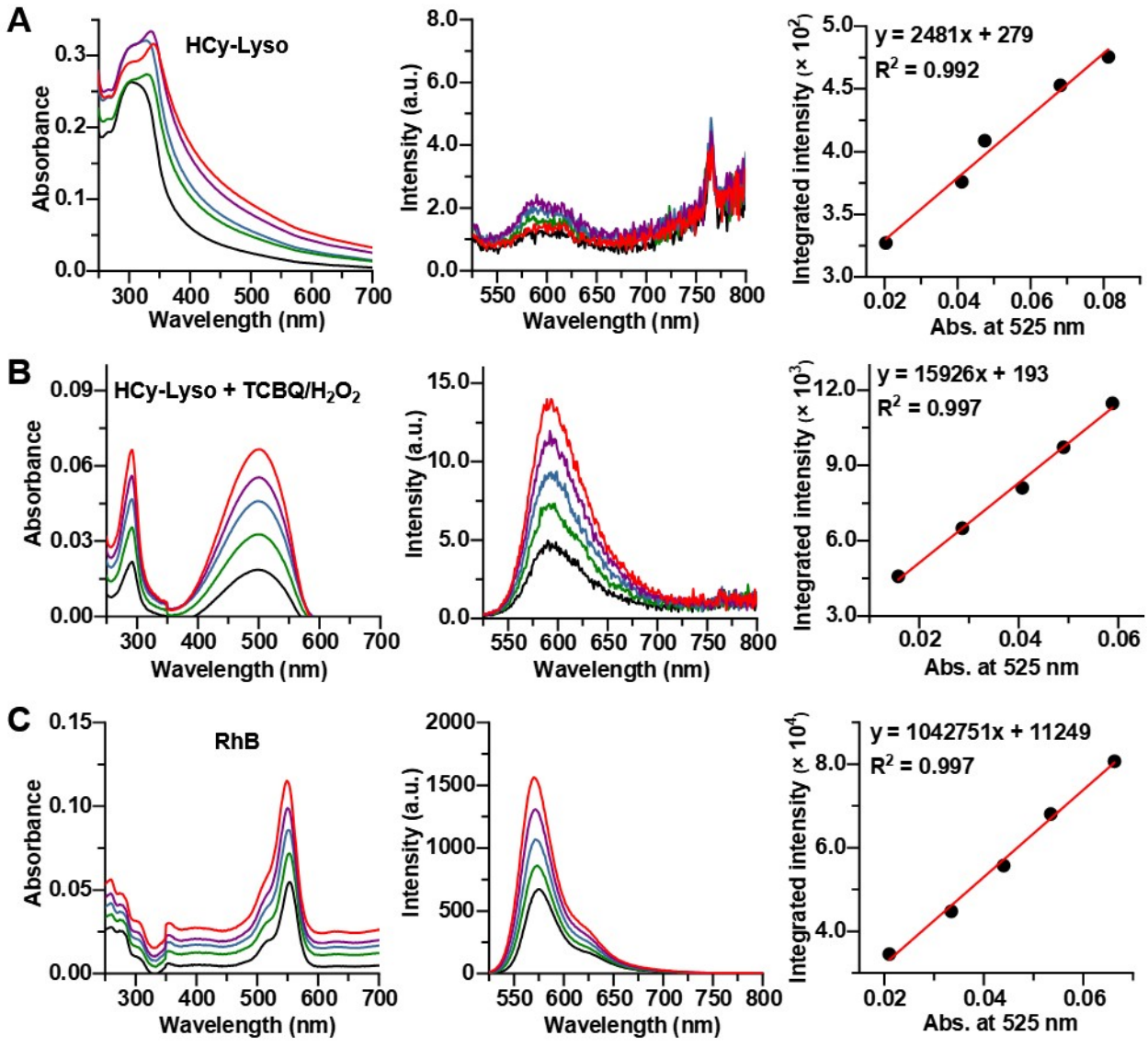


Fig. S1 Calculation the fluorescence quantum yield of HCy-Lyso, HCy-Lyso treating with TCBQ/H_2O_2 and RhB in pH 4.0 PBS solution and EtOH, respectively. Absorption spectra, fluorescence emission spectra, and plot of integrated fluorescence intensity (525-800 nm) versus absorbance at 510 nm of (a) HCy-Lyso, (b) HCy-Lyso treating with TCBQ/H_2O_2, and (c) RhB at various concentrations.

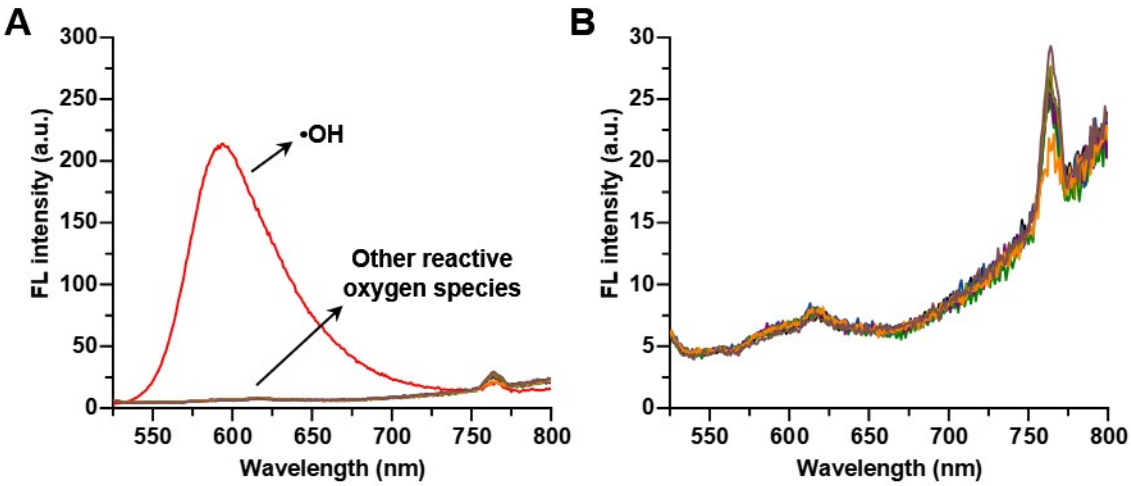


Fig. S2 (A) The fluorescence spectra of 10 μM HCy-Lyso toward various ROS in pH 4.0 phosphate buffer: control group; •OH, 10 μM TCBQ + 10 μM H_2O_2; 100 μM OCl^-; $^1O_2$ (100 μM H_2O_2 + 500 μM OCl^-); 100 μM NO; 100 μM H_2O_2; 100 μM $ONOO^-$; 100 μM TBHP. (B) The corresponding other ROS from (A). $\lambda_{ex/em}$ = 510/592 nm.

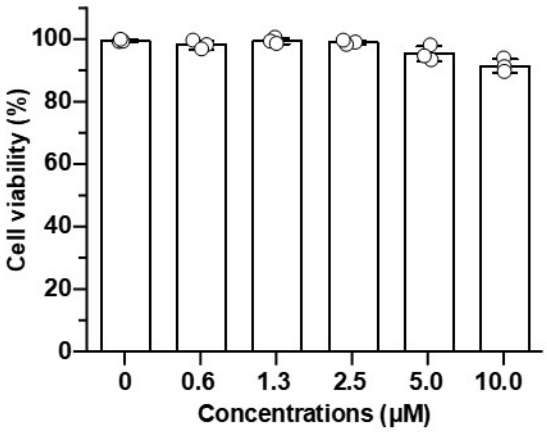


Fig. S3 Relative viability of 4T1 cells treated with various concentrations of HCy-Lyso (0-10 μM) for 12 h. Data are presented as the mean ± SD (n = 3).

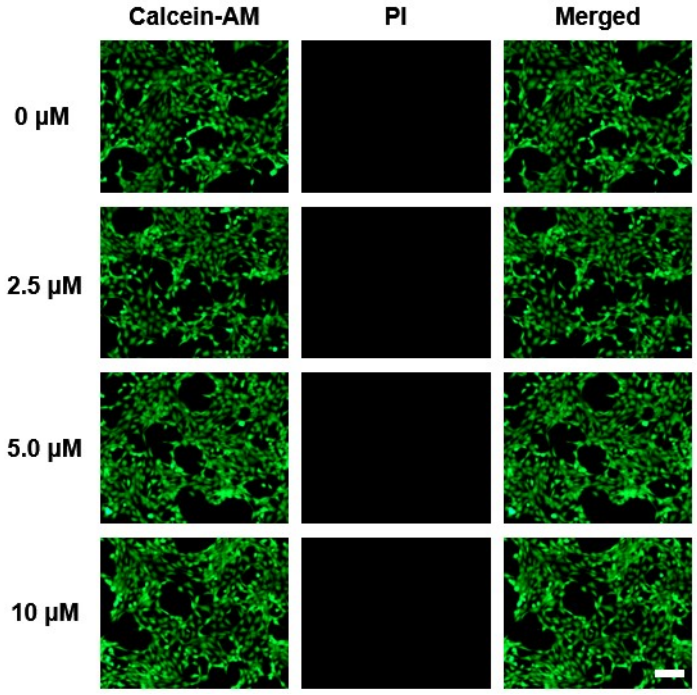


Fig. S4 Calcein-AM/PI co-staining of 4T1 cells after incubated with different concentrations of HCy-Lyso (0-10 μM) for 12 h in the dark. Scale bar: 100 μm.

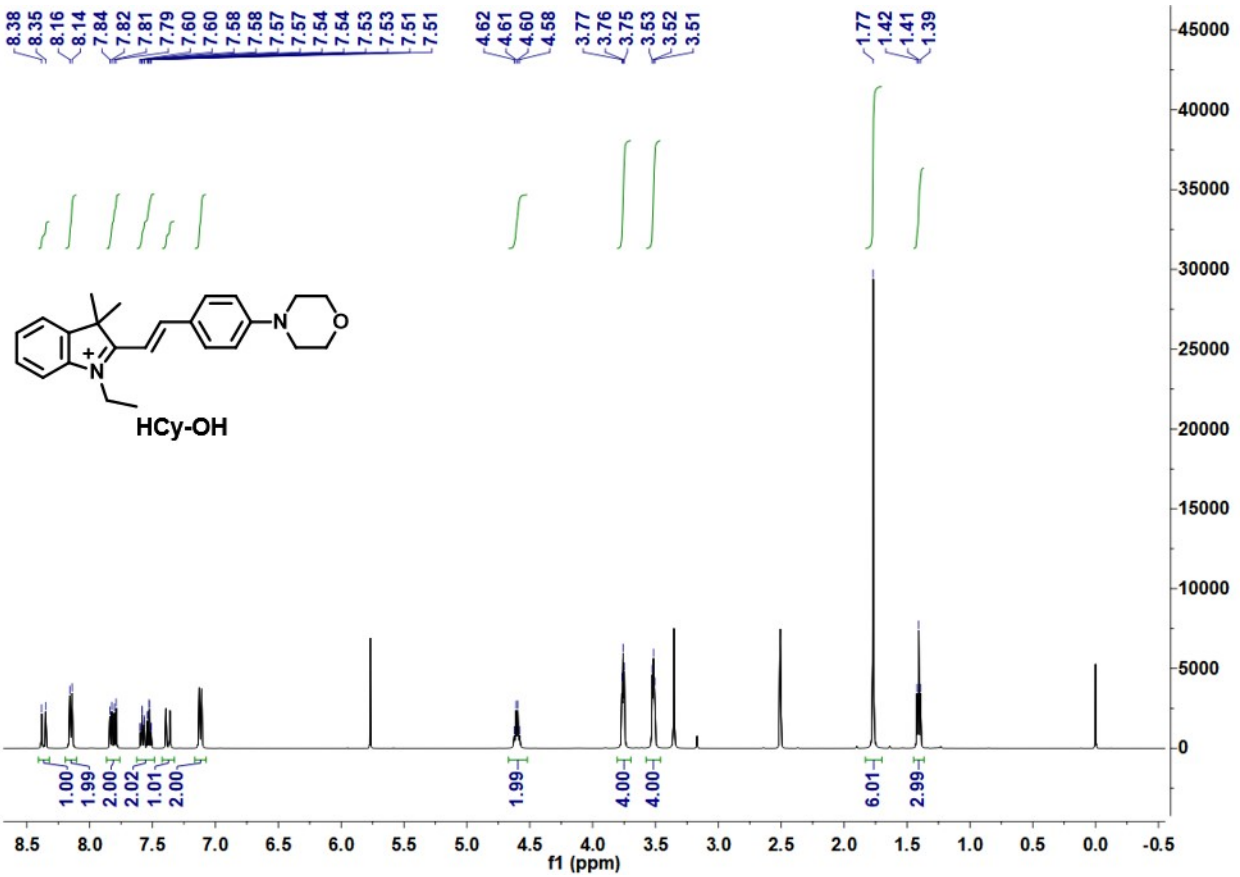


Fig. S5 ^{1}H NMR spectra of HCy-OH.

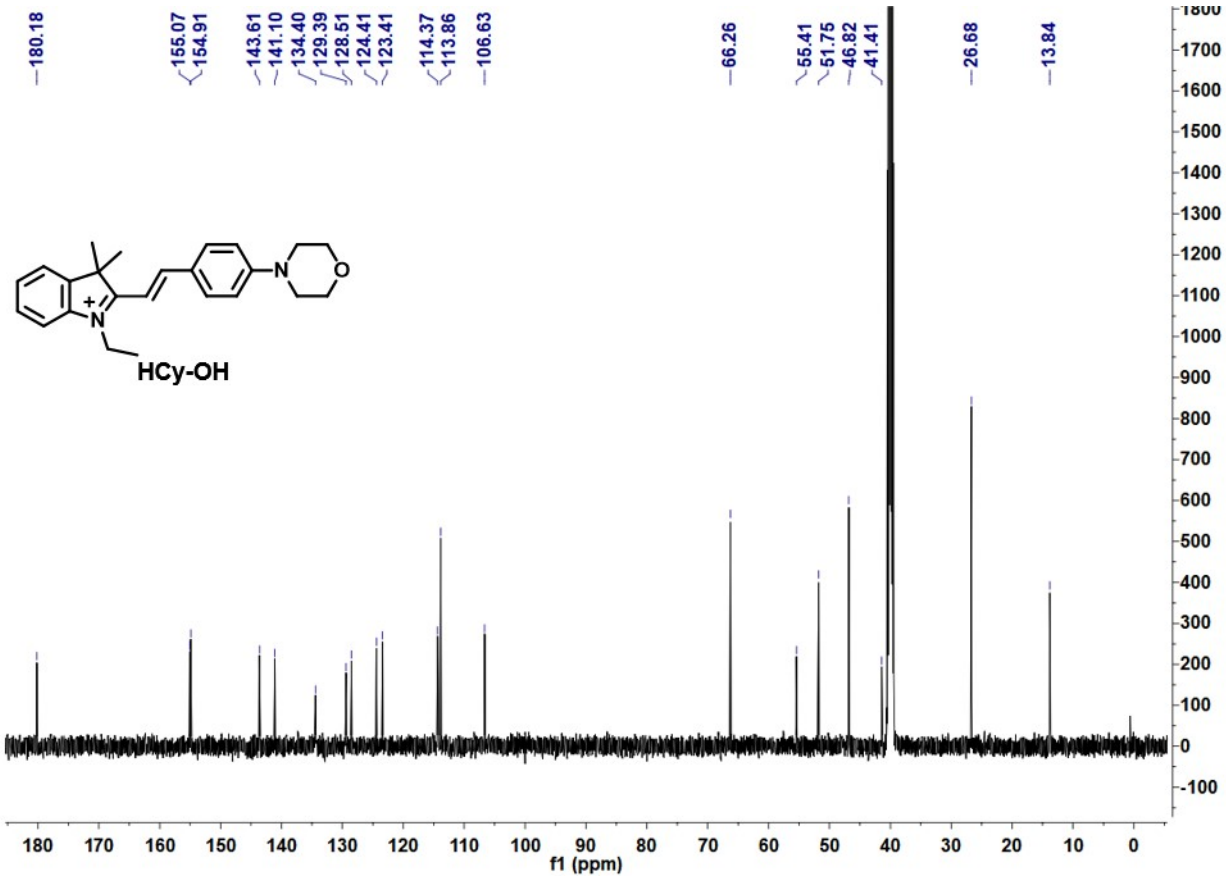


Fig. S6 ^{13}C NMR spectra of HCy-OH.

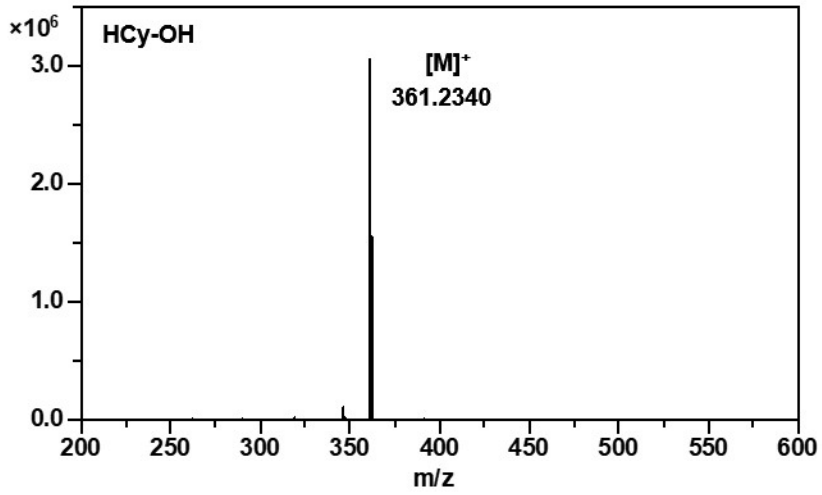


Fig. S7 HRMS spectra of HCy-OH.

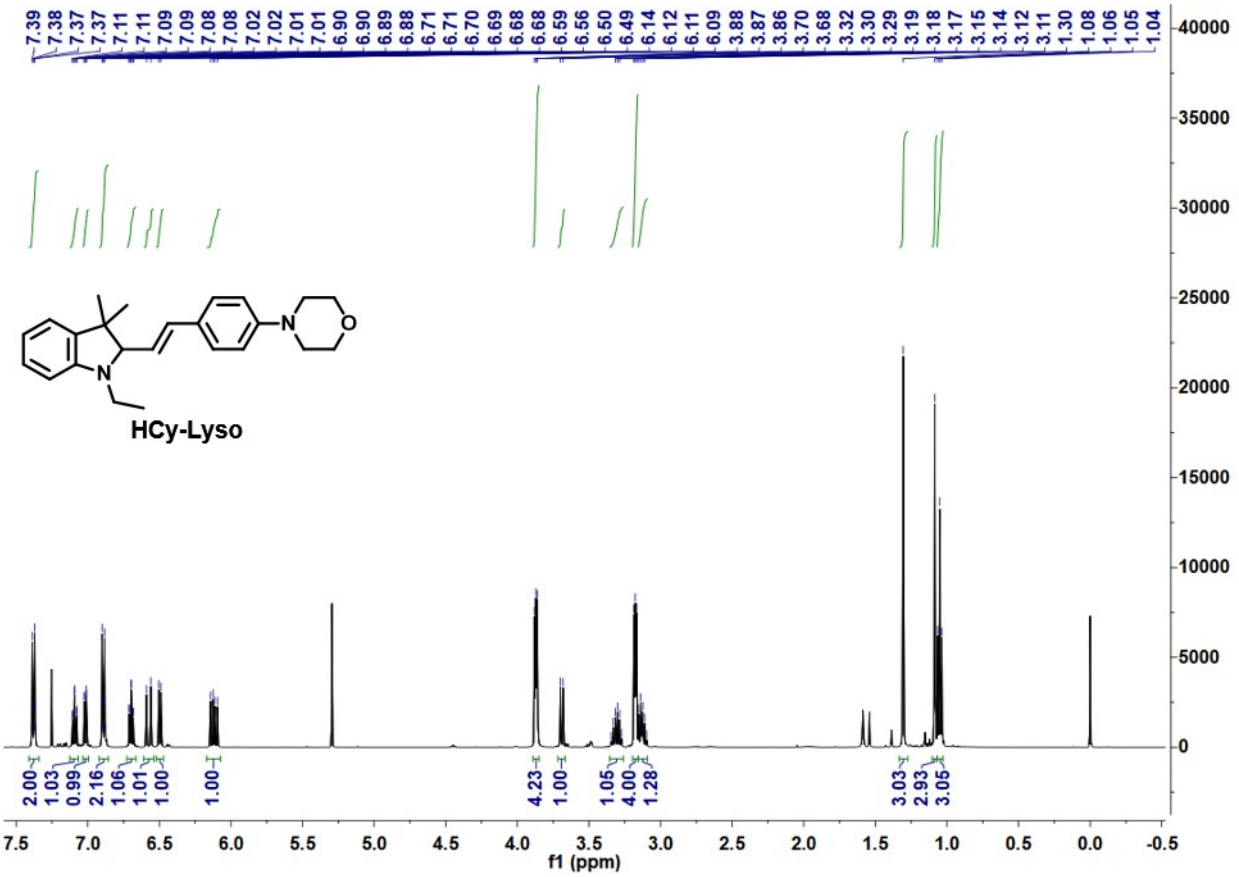


Fig. S8 ^{1}H NMR spectra of HCy-Lyso.

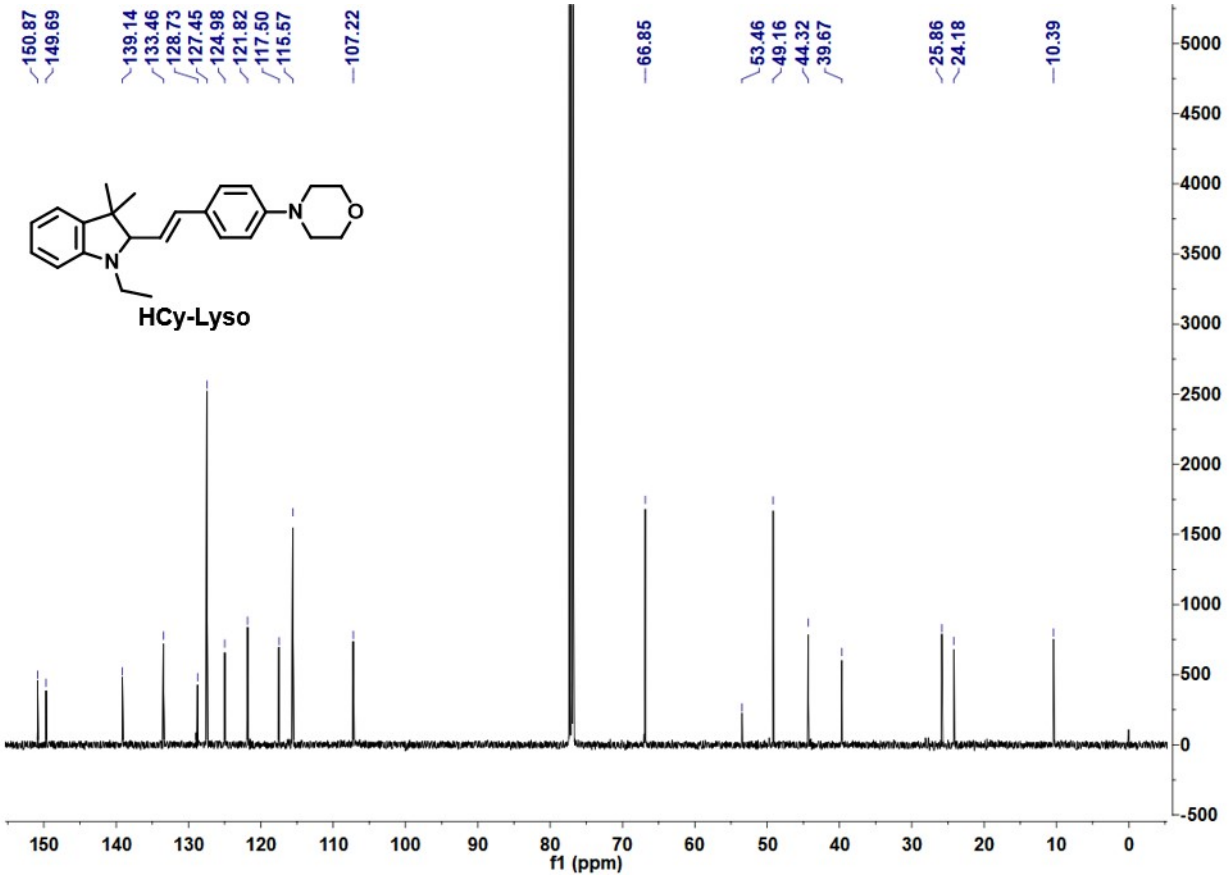


Fig. S9 ^{13}C NMR spectra of HCy-Lyso.

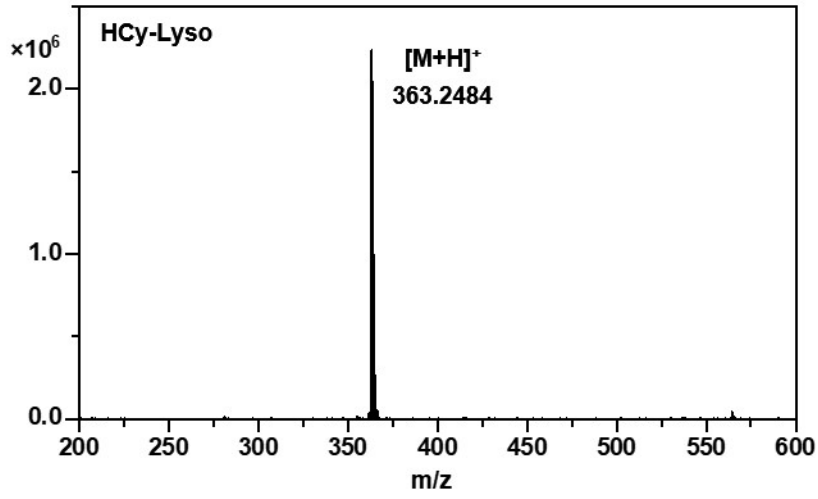


Fig. S10 HRMS spectra of HCy-Lyso.

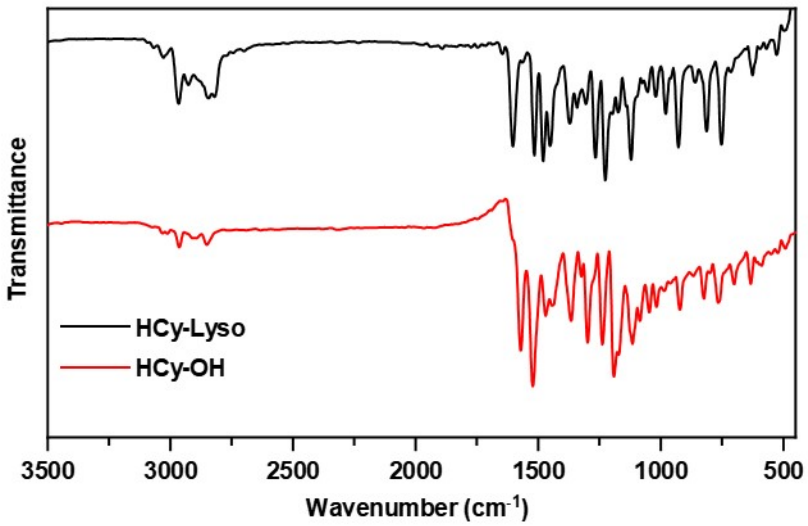


Fig. S11 FTIR spectra of HCy-Lyso and HCy-OH.

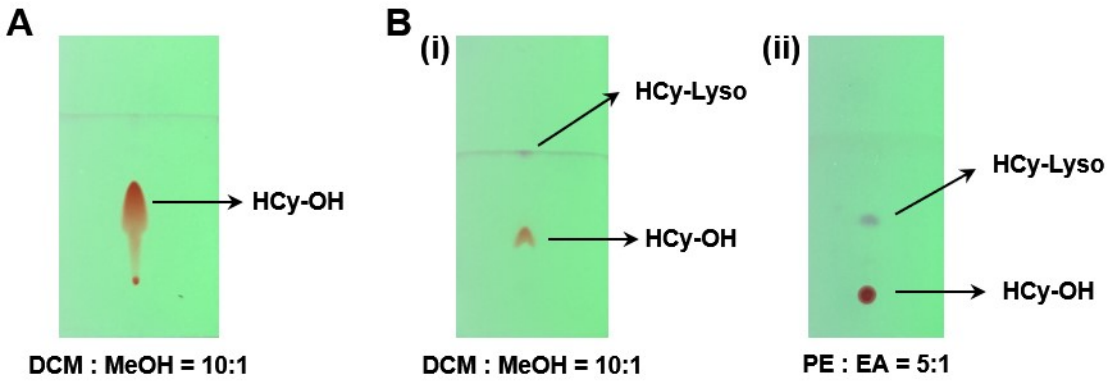


Fig. S12 (A) Thin layer chromatography plate of HCy-OH reaction solution, run with dichloromethane and methanol as eluent. (B) Thin layer chromatography of HCy-Lyso mixture with different eluent, (i) dichloromethane and methanol; (ii) petroleum ether and ethyl acetate.