Electronic Supplementary Material (ESI) for RSC Advances.

A Biotin-Guided Hydrogen Sulfide Fluorescent Probe and Its Application in Living Cell Imaging

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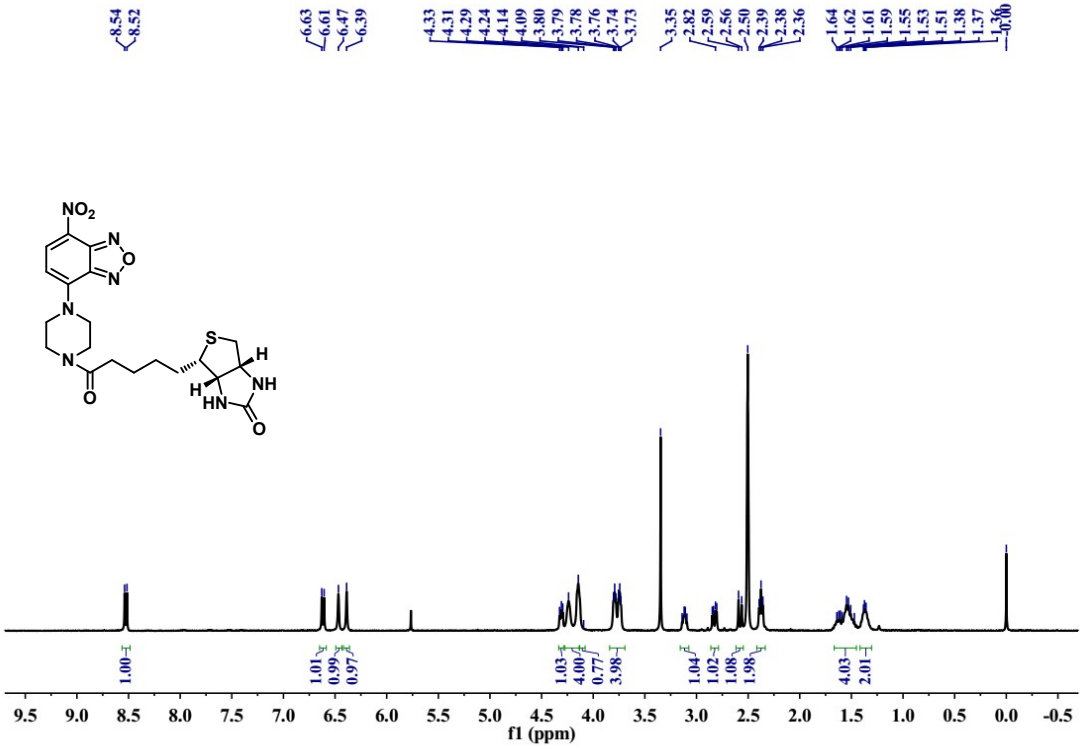

Fig. S1 ^{1}H NMR spectrum (DMSO-d_6) of NP-Biotin

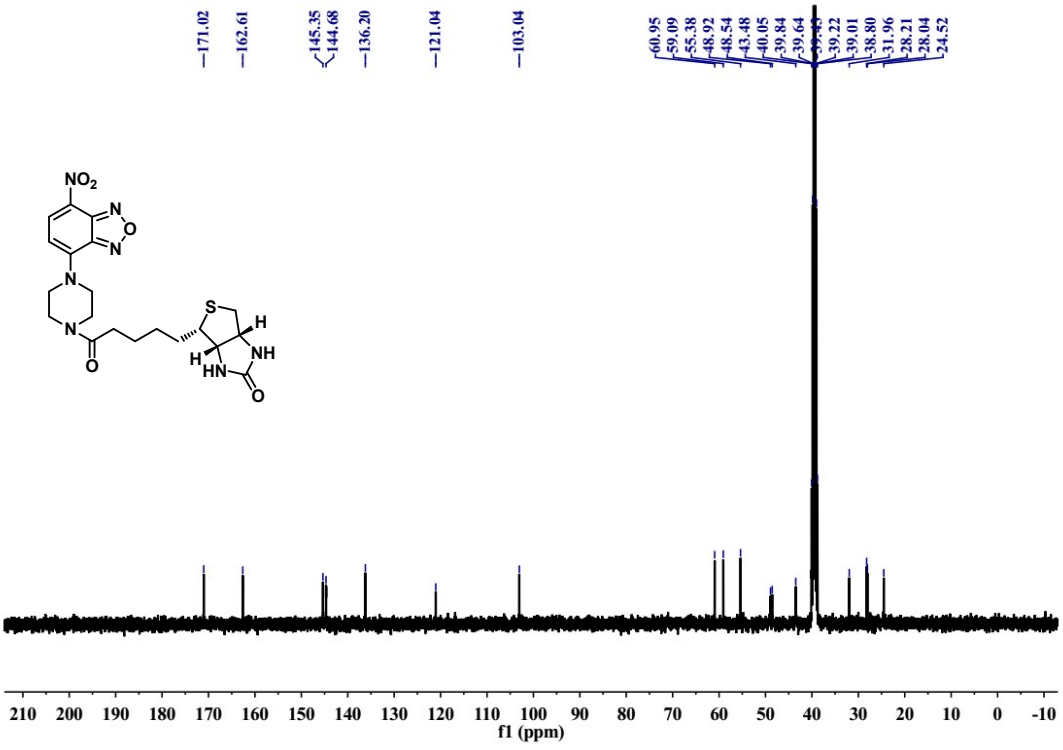

Fig. S2 ^{13}C NMR spectrum (DMSO-d_6) of NP-Biotin

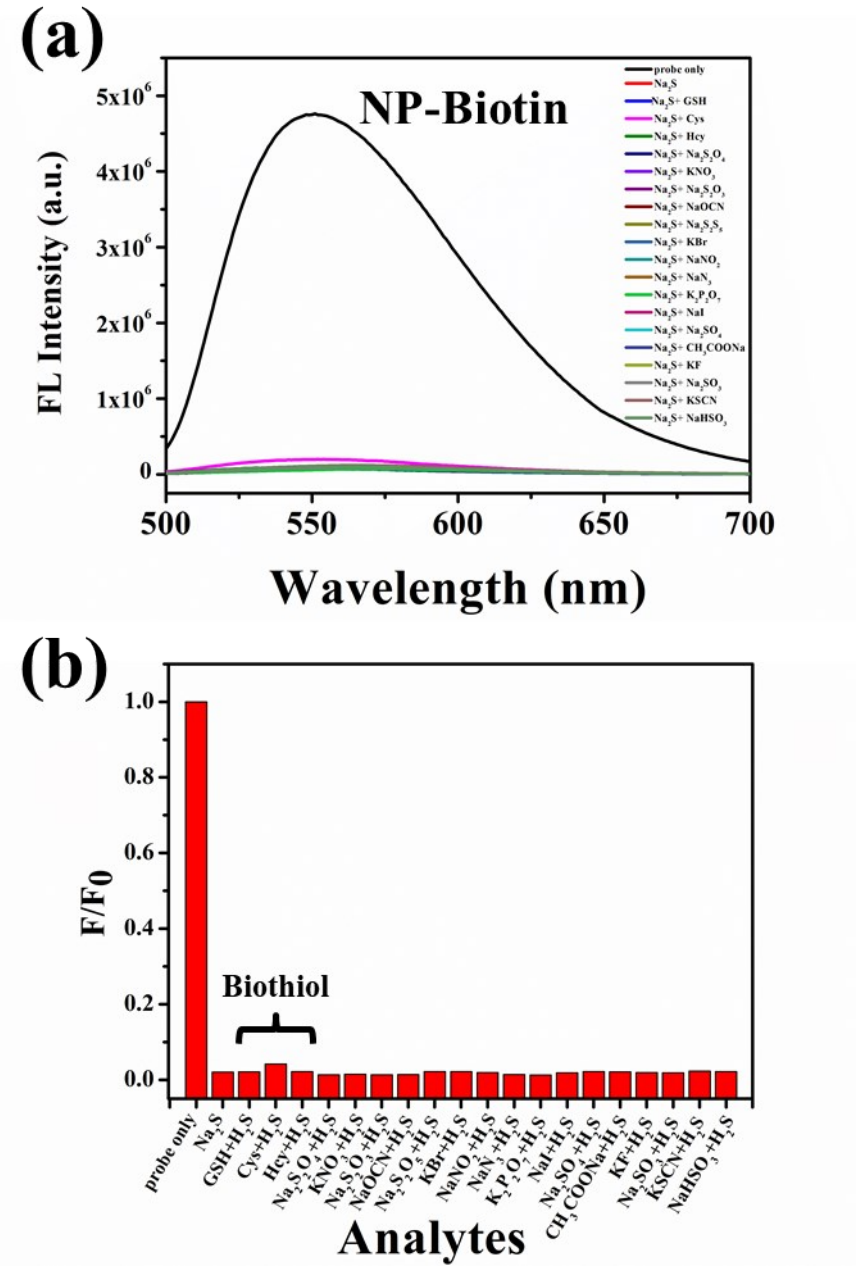

Fig. S3 Fluorescence spectra (a) and F/F_0 at 550 nm (b) of 10 μM NP-Biotin with Na_2S in the presence of various species (GSH, Cys, Hcy, $Na_2S_2O_4$, KNO_3, $Na_2S_2O_3$, NaOCN, $Na_2S_2O_5$, KBr, $NaNO_2$, NaN_3, $K_2P_2O_7$, NaI, Na_2SO_4, CH_3COONa, KF, Na_2SO_3, KSCN and $NaHSO_3$) under excitation at 480 nm. (F_0 represents the fluorescence intensity of NP-Biotin and F represents the fluorescence intensity of NP-Biotin with Na_2S in the presence of other guests respectively).

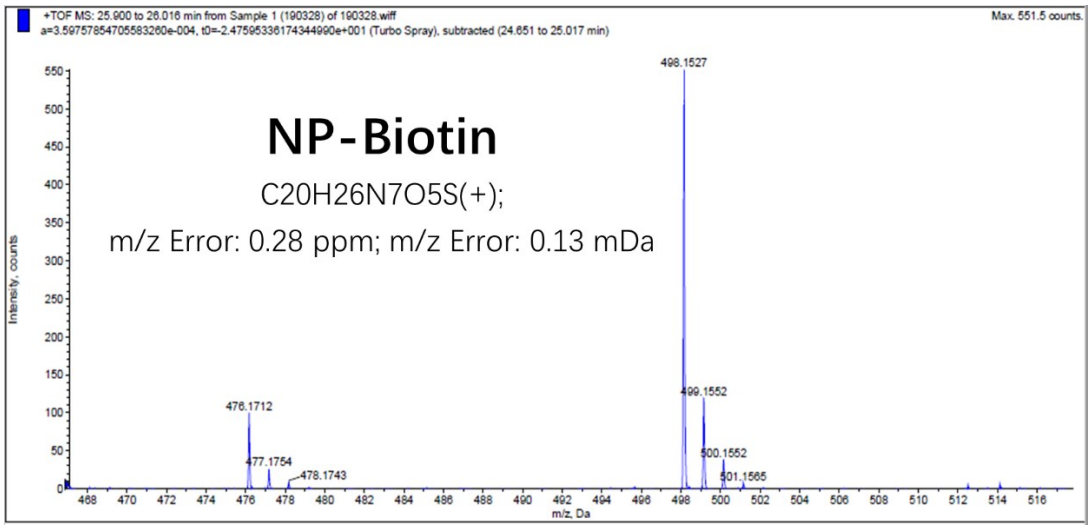

Fig. S4 HRMS study of NP-Biotin (100μM) in MeOH at room temperature

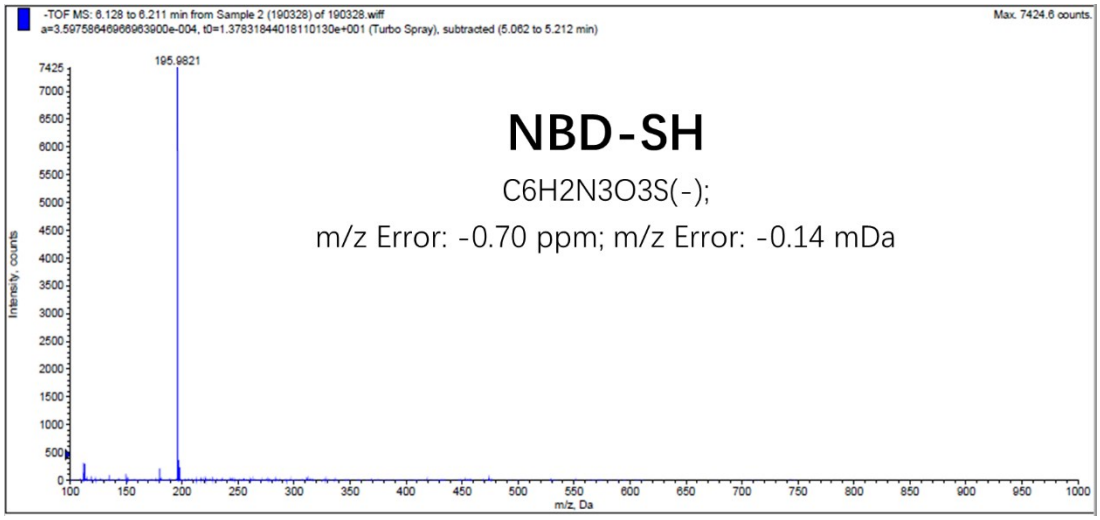

Fig. S5 HRMS study of the product of NP-Biotin (100μM) with Na_2S (1 mM) in MeOH at room temperature.

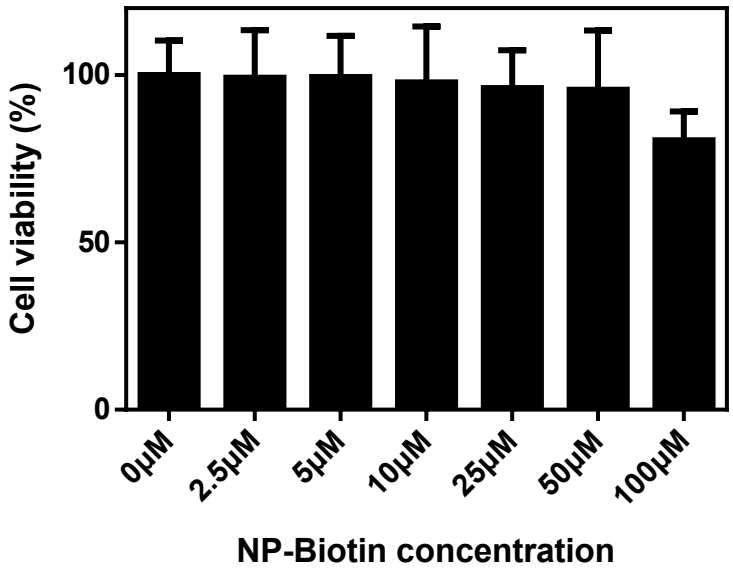

Fig. S6 Cytotoxicity of NP-Biotin towards HepG2. The cell viability was measured by CCK-8 assay.

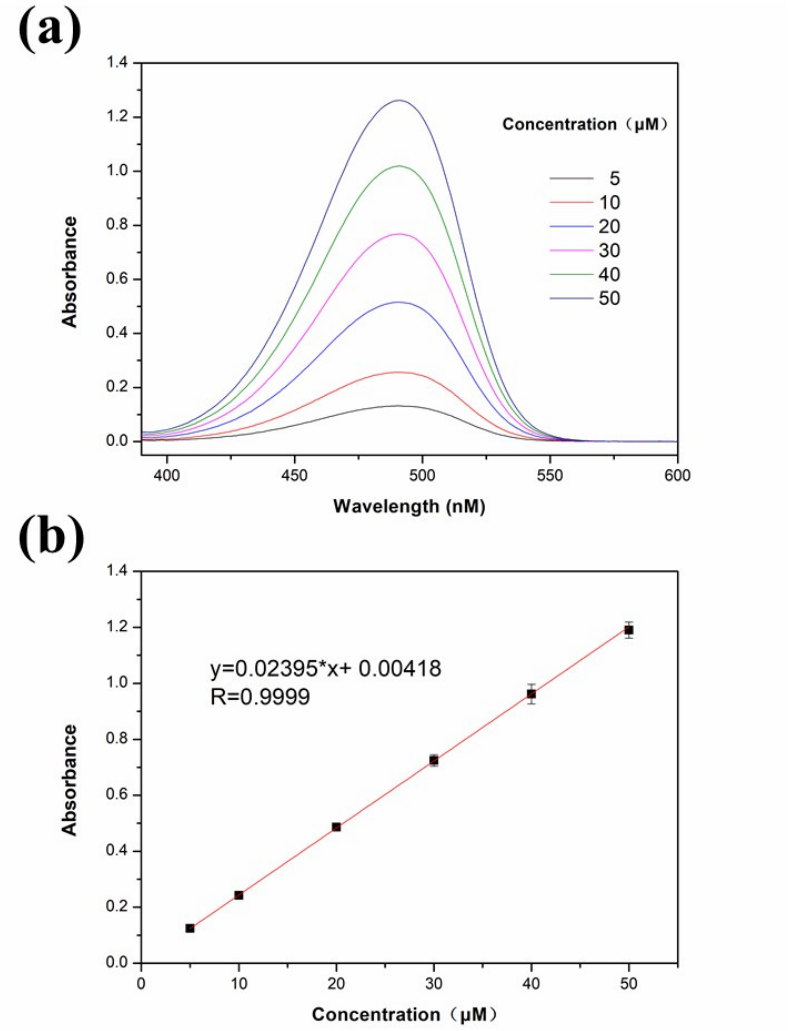

Fig. S7 (a) Fluorescence spectra of NP-Biotin at different concentrations in dimethyl sulfoxide(DMSO); (b) The linear relationship between absorbance and the NP-Biotin concentration. NP-Biotin showed maximal absorption at 490 nm ($\varepsilon=2.395\times10^4 L/(mol\cdot cm)$).

Optical properties of NP-biotin was examined in DMSO on a Cary Eclipse spectrophotometer and Fluorolog fluorescence spectrophotometer. For determination of the quantum efficiency (Φ_f) of fluorescence, Rhodamine 6G (Φ=0.95 in ethyl alcohol) was used as standards and the Φ_f value was calculated according to Equation (1)

$$\Phi_x / \Phi_{st} = [A_{st} / A_x][n_x^2 / n_{st}^2][D_x / D_{st}] \quad (1)$$

Where st refers to the standard, x refers to the sample, A is the absorbance at the excitation wavelength, and n is the refractive index.

We calculated that the fluorescence quantum yield of NP-Biotin was 0.05 in the absence of hydrogen sulfide.

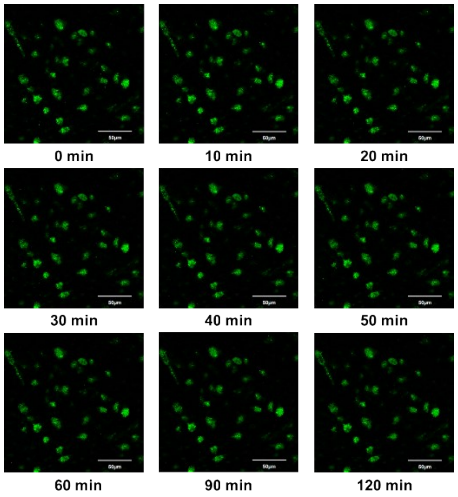

Fig. S8 Photobleaching of LO2 cells after NP-Biotin labeling. LO2 cells were imaged from 0 minute to 120 minutes after incubation with 10 μM NP-Biotin for 1 h and washing by PBS.