Supporting Information

Self-assembled Conjugated Polymer/Carboxymethyl Chitosan Graft Poly (p-dioxanone) Nanomicelles and Their Functionalized Indicator Paper for Fast and Visual Detection of Banned Food Dye

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^{1}H-NMR Spectra of CMCs and CMCs-g-PPDO Copolymer

In the spectrum of CMCs, the signal at 1.96 ppm and 2.95 ppm was belong to the protons of the methyl moiety of the acetyl amino group and that bonded to the C2 of the glucosamine ring, respectively. The overlapped peaks appearing in the range of 3.47-3.87 ppm were attributed to the protons on C3, C4, C5 and C6 of the glucosamine ring. The chemical shift at 3.9 corresponding to the protons of OCH_2COOR overlapped with the signals of pyrane ring, while no signal of NCH_2COOR appeared indicating the substitution majorly happened in O-sites.

Comparing with the spectrum of CMCs, new signals appear at 4.17, 4.15, 3.71 and 4.22 ppm in the spectrum of CMCs-g-PPDO Copolymer, in which the signals at 4.17, 4.15 and 4.22 were assigned to the a-, a′- and c-methylene of PPDO respectively, while the signal at 3.71 was attributed by both of the b and b′-methylene of PPDO. These results confirmed the successive grafting of PPDO onto CMCs.

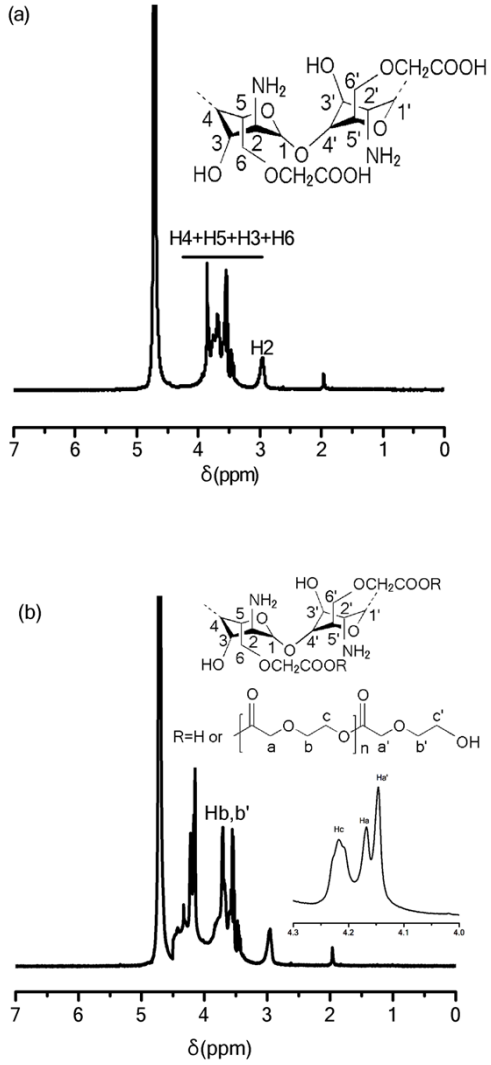

Figure S1. [1]H-NMR spectra of CMCs (a) and CMCs-g-PPDO (b)

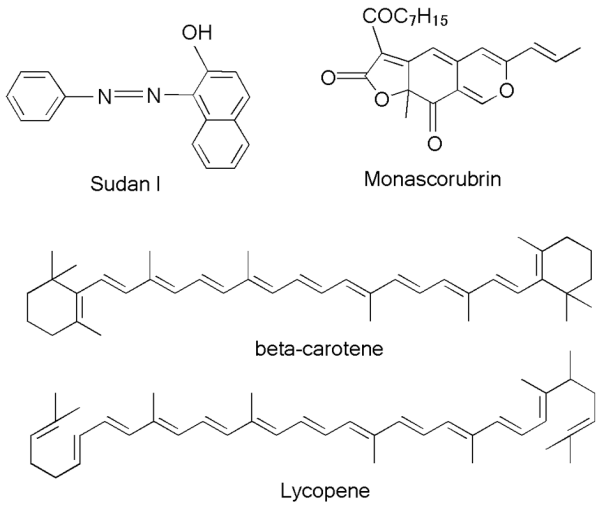

Figure S2. The structures of testing dye

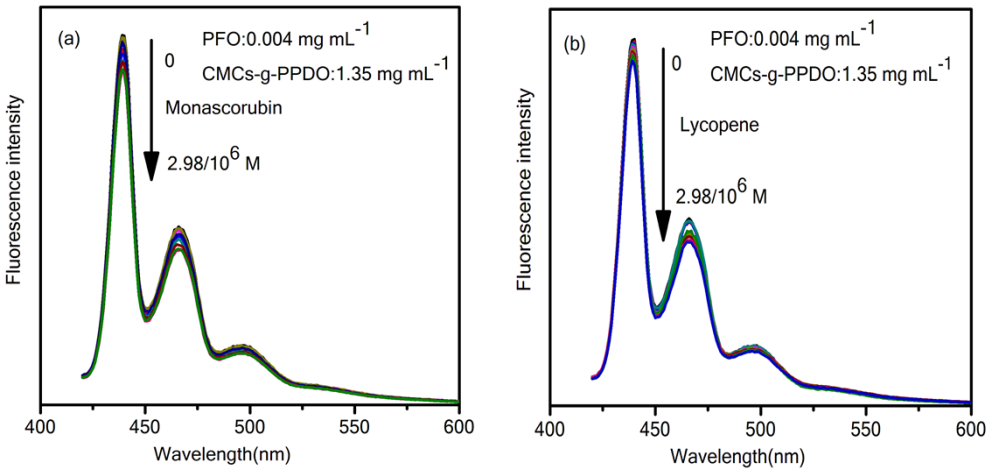

Figure S3. Fluorescence emission spectra of PFO in nanomicelles in the presence of different concentrations of Monascorubrin and Lycopene(λex= 340nm)

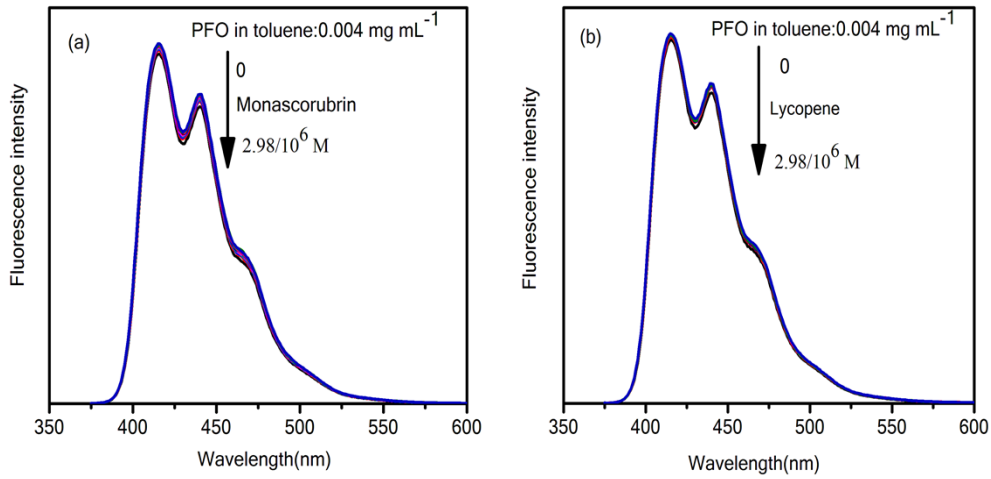

Figure S4. Fluorescence emission spectra of PFO in toluene in the presence of different concentrations of Monascorubrin and Lycopene (λex= 340nm)

Table S1. Summary of Stern-Volmer constants (K_{sv}) for the fluorescence quenching of PFO by Sudan I, beta-carotene (β-carotene), Monascorubrin and Lycopene

Testing dyes	PFO in nanomicelles $K_{sv}(M^{-1})$	PFO in toluene $K_{sv}(M^{-1})$
Sudan I	1.7423×10^{7}	4.31×10^{4}
β-carotene	1.801×10^{5}	3.08×10^{4}
Monascorubrin	3.61×10^{4}	5.60×10^{3}
Lycopene	1.83×10^{4}	2.00×10^{3}

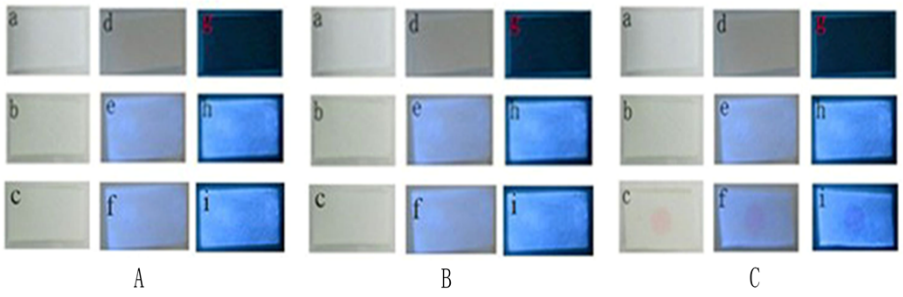

Figure S5. Photographs of the PFO/CMCs-g-PPDO functionalized fluorescent indicator paper in contact with β-carotene (A), Monascorubrin (B) and Lycopene (C) (a, b, c: pictures under daylight lamp; d, e, f: pictures under daylight lamp and UV lamp; g, h, i: pictures under UV lamp)