Supplementary Material

ROS-responsive activatable photosensitizing agent for imaging and photodynamic therapy of activated macrophages

Hyunjin Kim[a], Youngmi Kim[b], In-Hoo Kim[a], Kyungtae Kim*[,c] and Yongdoo Choi *[,a]

[a] Molecular Imaging & Therapy Branch, Division of Convergence Technology, National Cancer Center, 111 Jungbalsan-ro, Ilsandong-gu, Goyang, Gyeonggi-do 410-769, Republic of Korea

[b] Department of Chemistry, Institute of Nanosensor and Biotechnology, Dankook University, 126 Jukjeon-dong, Yongin-si, Gyeonggi-do 448-701, Republic of Korea

[c] Molecular Epidemiology Branch, Division of Cancer Epidemiology and Prevention, National Cancer Center, 111 Jungbalsan-ro, Ilsandong-gu, Goyang, Gyeonggi-do 410-769, Republic of Korea

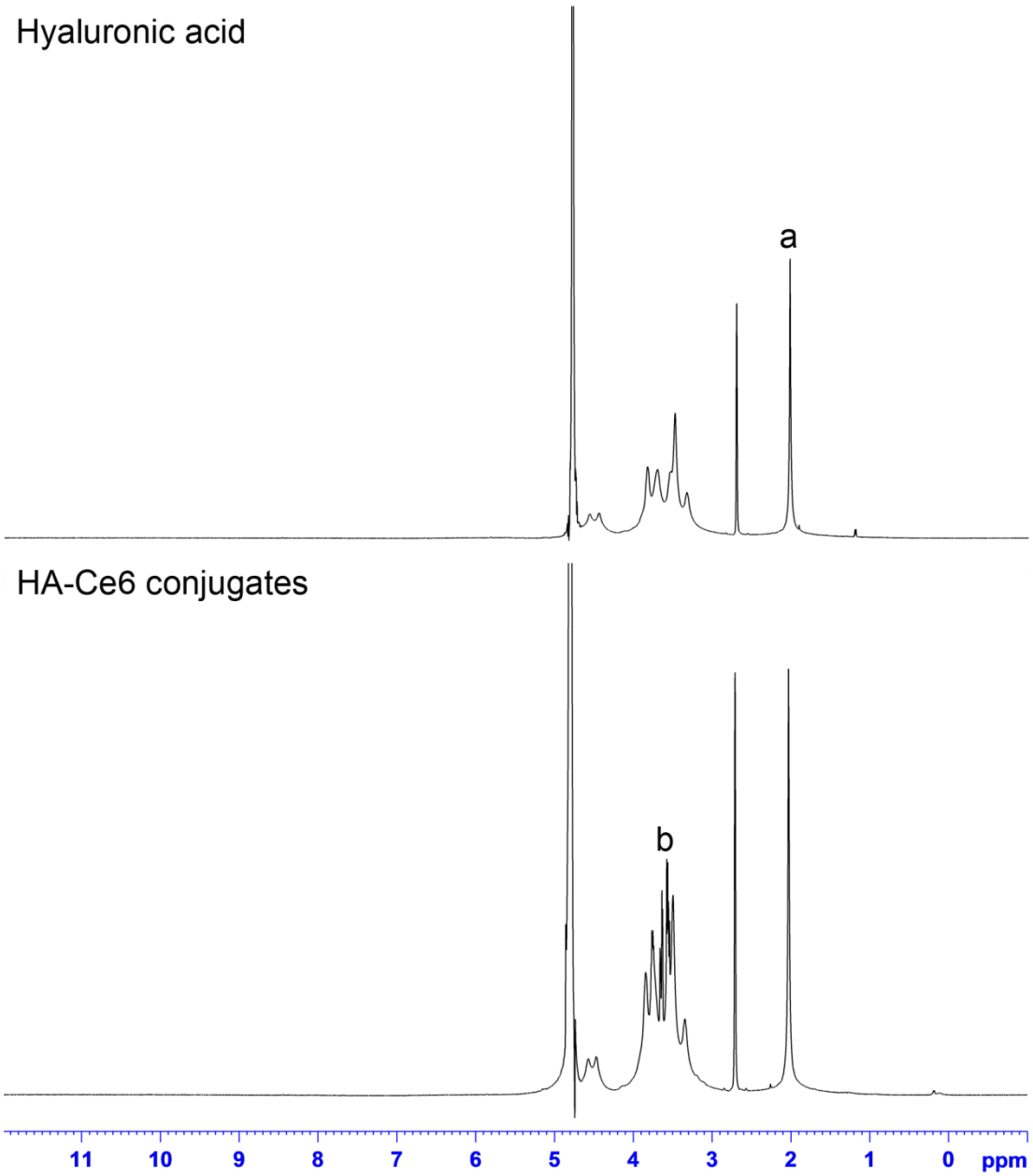

Figure S1. ^{1}H-NMR spectra of HA and HA-Ce6 conjugate in D_2O/DMSO-d6 cosolvent (1:1 v/v). The protons of the acetamido methyl group of the HA backbone and 3-$CH{=}CH_2$ group of Ce6 were observed at (a) 1.9 ppm and (b) 3.497–3.764 ppm, respectively. The ^{1}H-NMR spectrum of MacTNP confirmed the successful conjugation of Ce6 onto the HA backbones.

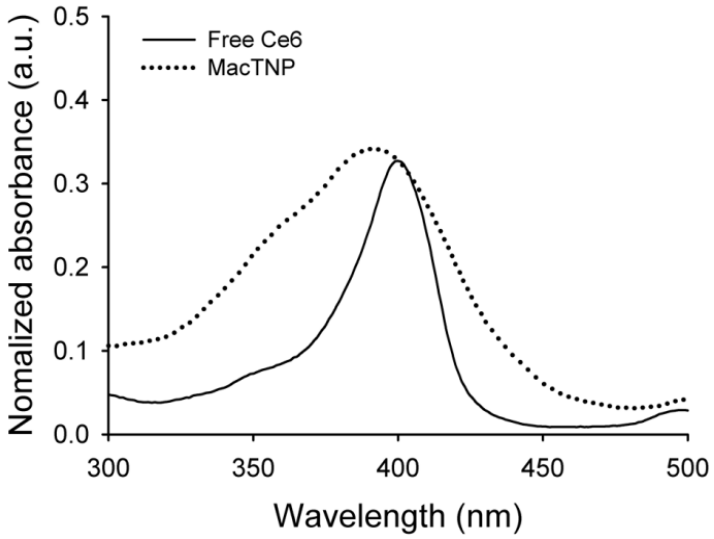

Figure S2. Normalized UV/Vis absorption spectra of free Ce6 and MacTNP in PBS solution.

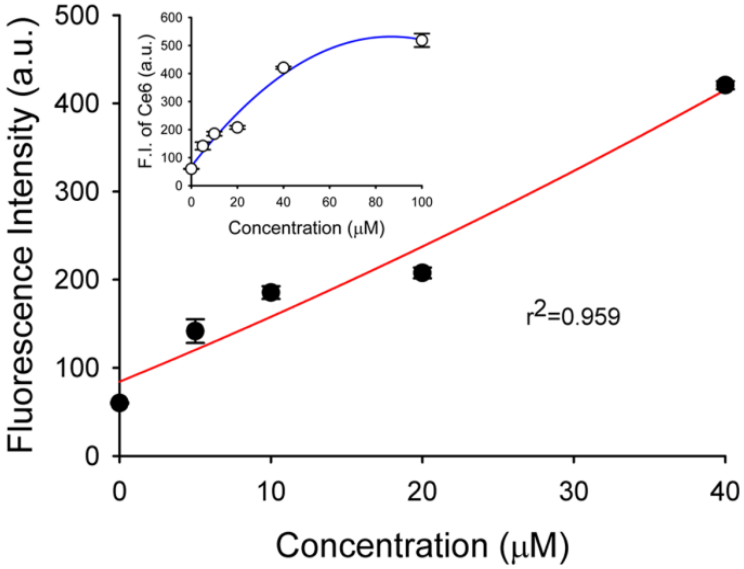

Figure S3. Fluorescence response of MacTNP to peroxynitrite concentrations of 0, 5, 10, 20, 40, and 100 μM (n = 4). MacTNP (equiv. Ce6 concentration of 0.5 μM) were treated with peroxynitrite in PBS (pH 7.4) for 2 h and then the MacTNP fluorescence intensity was measured (λ_{ex} 400 nm, λ_{em} 660 nm).

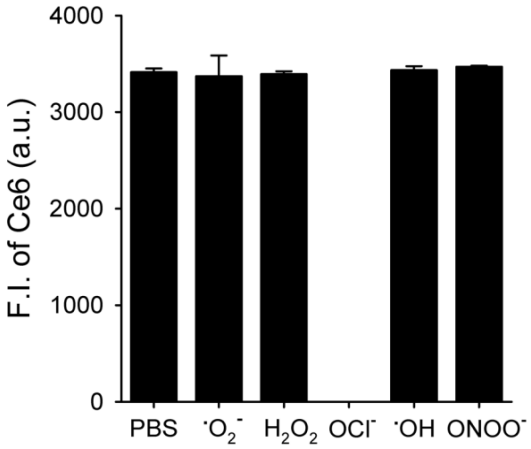

Figure S4. Effect of ROS on the chemical stability of free Ce6 (n=4). Free Ce6 (0.5 μM) dissolved in PBS was reacted with either 50 μM ROS or PBS for 1 h and the fluorescence intensity was measured (λ_{ex} 400 nm, λ_{em} 660 nm). The fluorescence of Ce6 almost disappeared after treatment with NaOCl, indicating that NaOCl caused significant chemical transformation of Ce6. The other ROS did not induce any change in fluorescence intensity of free Ce6. Therefore, we excluded NaOCl-treated samples from the following experiments.

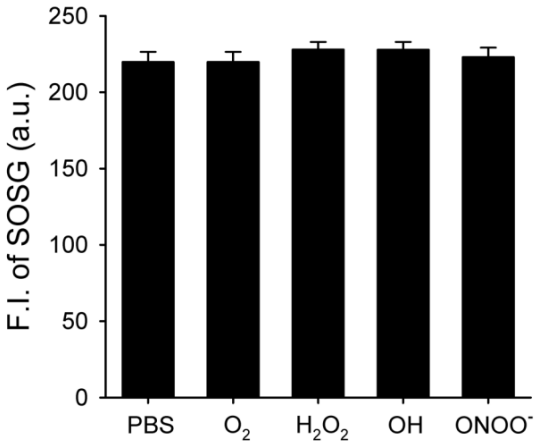

Figure S5. Effect of ROS treatment on the SOSG fluorescence (n=4). SOSG dissolved in PBS was treated with various ROS for 2 h and, then, its fluorescence intensity was measured without light illumination. No significant changes in the fluorescence of SOSG were observed, indicating that the chemical structure of SOSG was not changed by ROS in the experimental conditions of this study.