Electronic Supplementary Material (ESI) for Photochemical & Photobiological Sciences.

Supporting Information

Ultrafast excited state dynamics of nonfluorescent cyclopheophorbide-*a* enol, a catabolite of chlorophyll-*a* detoxified in algae-feeding aquatic microbes

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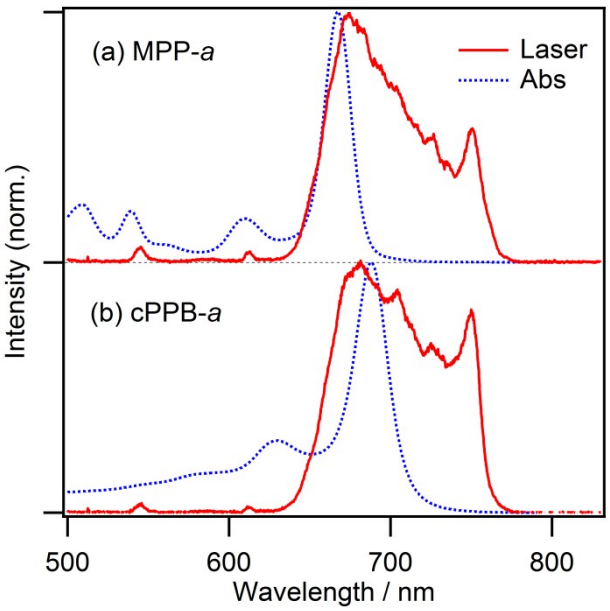


Figure S1. Electronic absorption spectra of (a) MPP-*a* and (b) cPPB-*a*E in dichloromethane (blue dashed curves) and spectra of excitation laser (red solid curves).

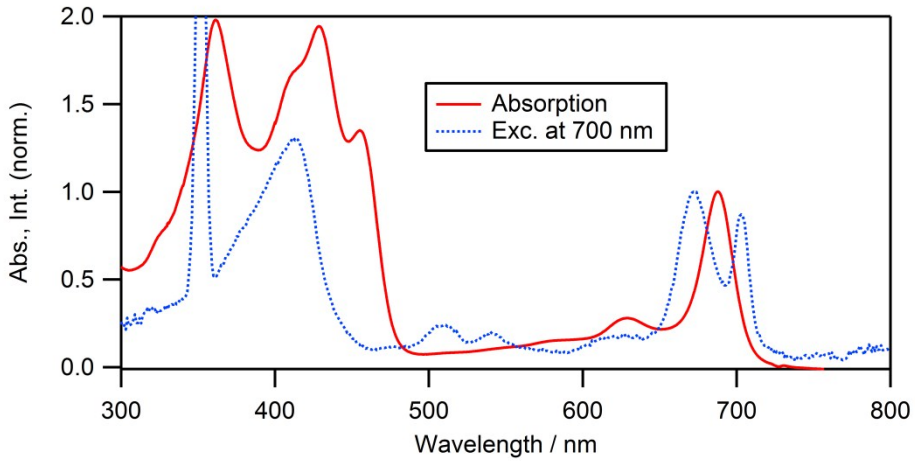
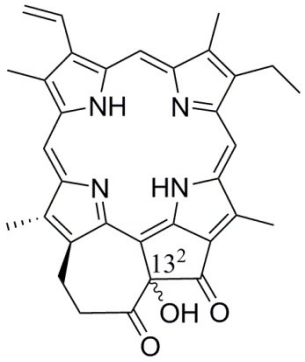


Figure S2. Electronic absorption (red solid curve) and fluorescence excitation spectra (blue dashed curve) of cPPB-*a*E in dichloromethane normalized at the Q_y band. Excitation spectrum was monitored at 700 nm, hence, the scattering of the excitation light and its secondary diffraction are seen at 700 and 350 nm, respectively.



13^2-OH form

Chart S1. Molecular structure of 13^2-OH form, a photo-oxidized product of cPPB-*a*E.

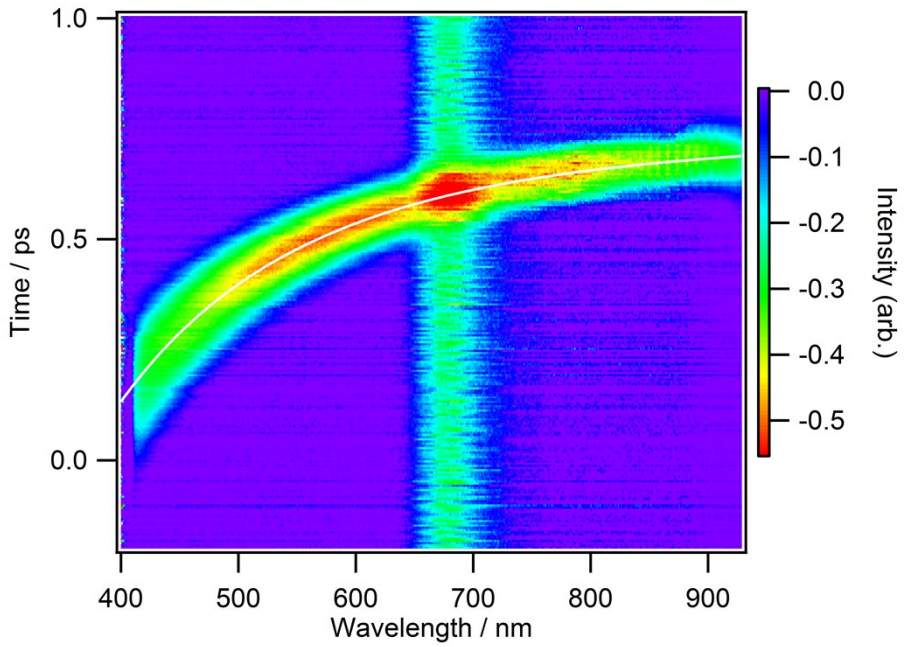


Figure S3. Heterodyne-detected Optical Kerr effect (HD-OKE) signal between the pump and the probe pulses obtained by replacing the sample solution in the rotating cell by neat carbon tetrachloride. The electronic response signal was utilized to compensate the group velocity dispersion of the TA signal measured for the experiment. The signal exhibits that the time-resolution of the measurement system is quite similar through the visible wavelength range of 400-900 nm. The position of the maximum of the OKE electronic response is represented by a white curve which was obtained by least-squares fitting utilizing Gaussian function. This curve can uniformly compensate the group velocity of the femtosecond TA spectrum. The result can be confirmed in Fig. S4 where the early time traces of the TA spectra at various wavelengths are compared for (a) MPP-*a* and (b) cPPB-*a*E in DCM.

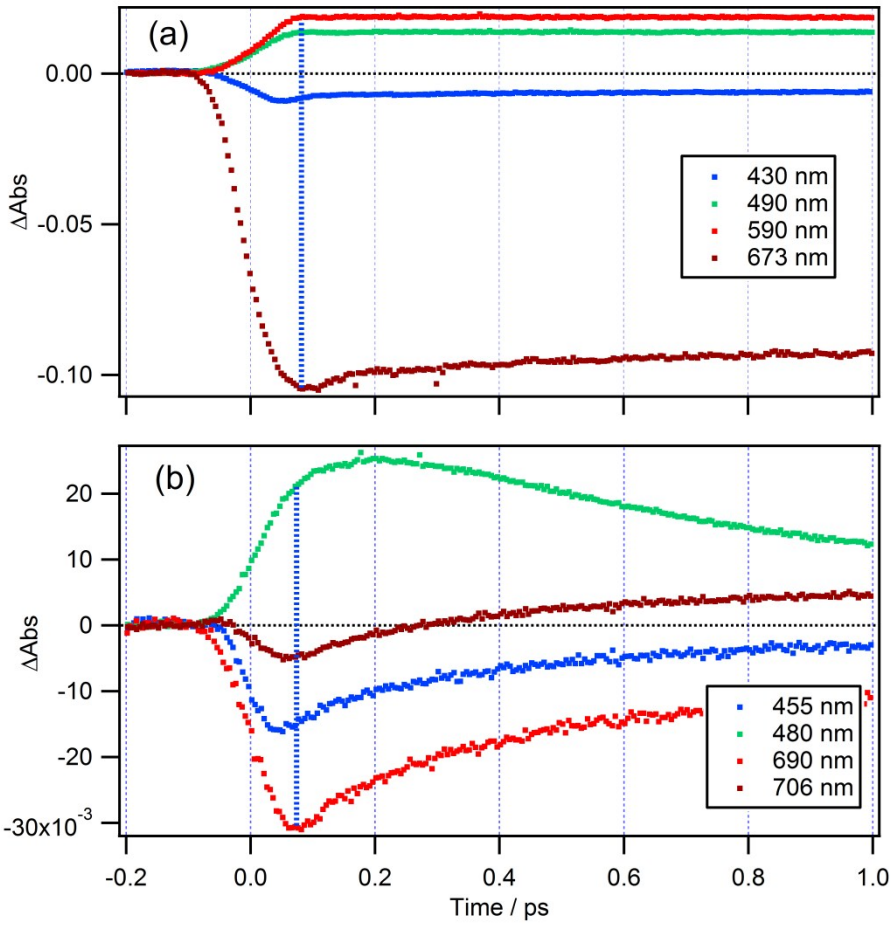


Figure S4. The early time traces of the TA spectra at various wavelengths are compared for (a) MPP-*a* and (b) cPPB-*a*E in DCM. The rise of the MPP-*a* signal is rather sharp throughout the wavelength range which confirms the uniformity of the time-resolution. By the comparison, it can be also confirmed that the delayed rise observed at 455 nm for cPPB-*a*E is indeed real and it is neither caused by some uncompensated group velocity dispersion nor ununiformity of the time-resolution.