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A Novel Two-Photon Fluorescent Probe with Long-Wavelength Emission for Monitoring HClO in Living Cells and Tissues

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ABSTRACT:

Hypochlorous acid (HClO), one of the most important reactive oxygen species (ROS), is a potent antimicrobial agent for the immune system against invasive bacteria and a wide range of pathogens. Therefore, it is critical to develop sensitive and selective methods for visualization of HClO in biological samples. In this work, a two-photon fluorescent probe (**HN2-TP**) with long-wavelength emission (far-red: 630 nm) based on rhodamine analogue for bioimaging HClO was developed. Owing to a specific HClO induced cyclization reaction, the new probe shows large fluorescence enhancement (about 106-fold), good linear range with high sensitivity (detection limit: 40 nM), high selectivity and fast response when monitoring HClO *in vitro*. More importantly, by successfully imaging HClO in living cells and tissues, this kind of two-photon fluorescent probe with long-wavelength emission is expected for accurate sensing in complex biosystems, which could eliminate undesired autofluorescence and self-absorption.

Keywords:

Two-photon; Fluorescent probe; Long-wavelength emission; HClO; Bioimaging

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