Sigma-Aldrich®

Data Sheet

BioTracker Carbon Monoxide Probe 1 Live Cell Dye

Live Cell Dye

Cat. # SCT051 **pack size:1 mg**

FOR RESEARCH USE ONLY
NOT FOR USE IN DIAGNOSTIC PROCEDURES
NOT FOR HUMAN OR ANIMAL CONSUMPTION

Store at: -20ºC

Background

Carbon Monoxide (CO) is a colorless, odorless, tasteless gas that is highly toxic and lethal to mammals. However, there is growing evidence that CO can be endogenously produced in our human body during the haem catabolism, and it was proved to be an important cell signaling molecule with substantial therapeutic potential protecting from vascular, inflammatory, or even cancer diseases.

BioTracker™ Carbon Monoxide live cell dye is an allyl fluorescein ether-based probe for detecting CO in living cells. The dye is highly selective for CO and shows no effect with other analytes such as F−, Cl−, Br−, I−, AcO−, HCO_3−, N_3−, NO_3−, SO_4^{2-}, HSO_4−, HSO_3−, HS−, SCN−, CN−, ClO_4−, IO_4−, PO_4^{3-}, and HPO_4^{2-}, biothiols such as Cys, Hcy, and GSH, amino acids such as Ser, Trp, Ala, Phe, Gln, Glu, Lys, Leu, Gly, and Ile, and reactive oxygen/nitrogen species (ROS/RNS) such as ClO−, H_2O_2, NO_2−, NO, HNO, ROO-, BuOO-, and -OH.

Spectral Properties

λ_{ex} = 450-480 nm, λ_{em} = 525 nm (Green)

Quality Control Testing

Purity: ≥ 98% confirmed by HPLC, HNMR, LC-MS and elemental analysis. Molar Mass: 412.43 g/mol

Storage and Handling

Store BioTracker™ Carbon Monoxide Probe 1 Live Cell Dye at -20°C, desiccate and protect from light

Note: Centrifuge vial briefly to collect contents at bottom of vial before opening.

Presentation

Lyophilized. White solid.

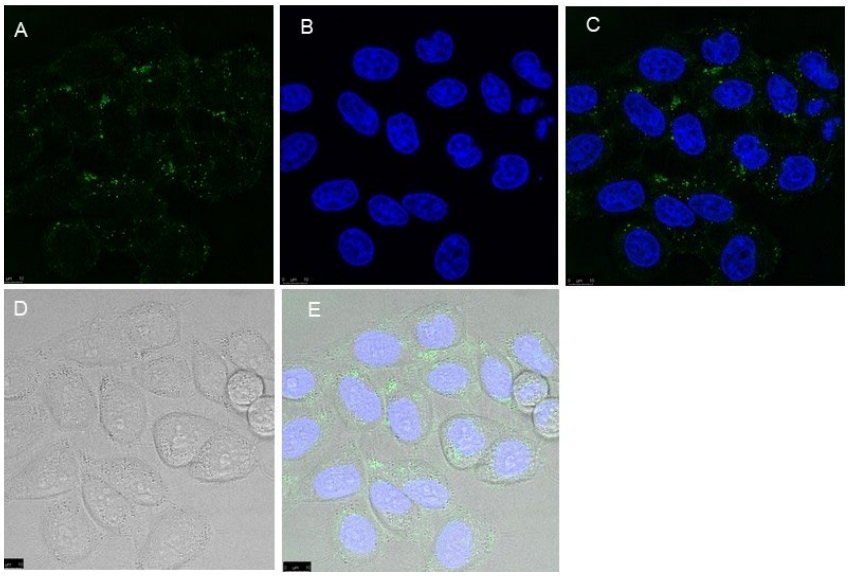
Materials Required But Not Supplied

1. $PdCl_2$ (MilliporeSigma: Cat# 205885-1G or 520659-1G)
2. CROM-3 (MilliporeSigma Cat# SML0496-10mg), a carbon monoxide-releasing molecule

Ver. 1.0/04JAN2022/Cat.# SCT051/AN

Representative Data

Figure: HeLa cells were incubated with SCT051 and $PdCl_2$ (A), 1 µM each, for 30 minutes. The cells were co-stained with DAPI (B). Merged image with SCT051 and DAPI staining is shown here (C), as well as brightfield image (D) and merged image with SCT051, and DAPI in brightfield view(E). Pre-incubation of cells with CROM-3 is essential for SCT051 staining.



Protocols

Reagent Preparation

1. Before opening the vial, spin down the solid to the bottom by a microcentrifuge or by a desktop centrifuge.
2. Warm the vial to the room temperature and add 242 µL of DMSO to prepare a 10 mM stock solution of SCT051 (freeze aliquots at -20°C).

Live Cell Imaging

1. Plate your cells of interest in a 24-well plate or equivalent plate and culture the cells overnight.
2. Remove the cell culture medium and pre-incubate the cells with 10 µM of CORM-3 in cell culture medium for 30 minutes at 37°C.
3. After 30 minutes remove the pre-incubation medium and add cell culture medium with SCT051 (1 µM) and $PdCl_2$ (1 µM) at 37ºC for 30 min.
4. Replace with cell culture medium and image the cells. Excitation wavelength (450-480 nm), emission wavelength (527 nm, green).

Note: Optimal concentration of CROM-3, SCT051 and $PdCl_2$ must be determined by end user.
Note: SCT051 staining works only in the presence of CROM-3 and $PdCl_2$.

References

Feng S et al. *Allyl Fluorescein Ethers as Promising Fluorescent Probes for Carbon Monoxide Imaging in Living Cells.* Anal Chem. 2017, 89, 3754-3760.