Fluorescent Probes for Lipid Peroxidation

MitoPeDPP

PRODUCT DESCRIPTION
MitoPeDPP is a cell-membrane-permeable probe, Perylene-based dye. It specifically localizes in mitochondria due to the triphenylphosphonium moiety introduced. As the excitation and emission wavelength of MitoPeDPP are 452 nm and 470 nm, respectively, the probe can be applied for lipophilic peroxide imaging in living cells. This probe has been developed by Dr. Shioji et al. at Fukuoka University, Department of Chemistry.

LOCALIZATION
A: MitoPeDPP stained Mitochondria with t-BHP treatment
B: MitoRed stained Mitochondria
C: Merged Image (A/B)

Lipophilic Peroxides Detection in Mitochondria (HepG2 cell)

SELECTIVITY
Even though MitoPeDPP reacts with various peroxides (H₂O₂, t-BHP, ONOO⁻) in homogeneous systems (data is not shown), the MitoPeDPP is specifically-oxidized by t-BHP in mitochondria (A) but not with ROS and RNS (B).

A: MitoPeDPP stained cells with t-BHP treatment (t-BHP) and without (control).
B: MitoPeDPP stained cells with ROS or RNS exposure.

Selectivity of MitoPeDPP as a Peroxides Probe
Liperfluo

Liperfluo, a perylene derivative containing oligooxyethylene, is designed and exclusively developed by Dojindo for a detection of lipid peroxides and emits intense fluorescence by a lipid peroxide specific oxidation in organic solvents such as ethanol. Liperfluo oxidized form is almost nonfluorescent in an aqueous media, it emits fluorescence in lipophilic sites such as in cell membranes. Therefore it can easily be applied to lipid peroxide imaging by a fluorescence microscopy and a flow cytometric analysis for living cells.

Spy-LHP

Spy-LHP is a low-fluorescent compound, but is oxidized with lipid hydroperoxide to become a high fluorescent compound. Since the oxidized Spy-LHP emits strong fluorescence (quantum yield: ~1) with maximum wavelength at 535 nm when excited at 524 nm, damage to live cells is very small. Spy-LHP has two alkyl chains to improve the affinity to the lipid bilayer. Spy-LHP is highly selective to lipid hydroperoxide and does not react with hydrogen peroxide, hydroxy radicals, superoxide anion, nitric oxides, peroxynitrite, and alkylperoxy radicals.

**IMAGING DATA**

Liperfluo stained cells with t-BHP treatment (t-BHP) and without treatment (control)

Data was provided by Dr. Hirotaka Imai and Dr. Takeshi Kumagai (Kitasato University School of Pharmacy).

Fluorescent Image of Lipid Peroxidation in Living Cells (L929 cell)

**PROPERTIES OF EACH FLUORESCENT PROBE**

<table>
<thead>
<tr>
<th>Description</th>
<th>MitoPeDPP</th>
<th>Liperfluo</th>
<th>Spy-LHP</th>
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<tbody>
<tr>
<td>Product Code</td>
<td>M466-10</td>
<td>L248-10</td>
<td>S343-10</td>
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<tr>
<td>Staining Area</td>
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<td>Fluorescent Property</td>
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<td></td>
<td>Em: 470 nm</td>
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