MQA-P TFA

Cat. No.: HY-149203A

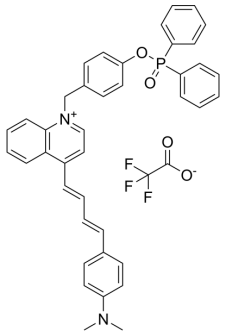
Molecular Formula: $C_{42}H_{36}F_3N_2O_4P$

Molecular Weight: 720.72

Target: Fluorescent Dye

Pathway: Others

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

MQA-P is a multifunctional near-infrared (NIR) fluorescent probe that simultaneously detects $ONOO^-$, viscosity, and polarity within mitochondria. MQA-P exhibits significant response to $ONOO^-$, λ_{em}=645 nm; and NIR channel at λ_{em}>704 nm Medium is highly sensitive to viscosity/polarity. MQA-P possesses excited-state intramolecular charge transfer (ESICT) properties that are highly sensitive to polarity by designing the N,N-dimethylamino group as the electron donor and the quinoline cation unit as the electron acceptor. MQA-P is used for ferroptosis or cancer diagnosis in vitro and in vivo via dual-channel images [1][2].

In Vitro

Guidelines (Following is our recommended protocol. This protocol only provides a guideline, and should be modified according to your specific needs).

1. MQA-P is dissolved in dimethyl sulfoxide (DMSO) to prepare a stock solution (1.0 mM).
2. For imaging of $ONOO^-$ in live cells.

HeLa cells are incubated with MQA-P (5 μM) for 30 min as control; pretreated with SIN-1 (HY-126849; 100 μM) for 30 min and then incubated with MQA-P (5 μM) for another 30 min. The fluorescence images are obtained on a confocal laser scanning microscope with a green channel (λ_{ex}= 405nm, λ_{em}= 550-670 nm).

3. For imaging of viscosity in live cells.

HeLa cells were incubated with MQA-P (5 μM) for 30 min as control; pretreated with Monensin (HY-N4302; 10 μM) for 30 min and then incubated with MQA-P (5 μM) for another 30min. The fluorescence images are obtained on a confocal laser scanning microscope with a red channel (λ_{ex}= 561 nm, λ_{em}= 680-750 nm).

4. For dual-channel imaging of $ONOO^-$, viscosity and polarity during ferroptosis.

HeLa cells are incubated with MQA-P (5 μM) for 30 min as control; pretreated with Erastin (HY-15763; 50 μM) for 30 min and then incubated with MQA-P (5 μM) for another 30 min. The fluorescence images are obtained on a confocal laser scanning microscope with a green channel (λ_{ex}= 405nm, λ_{em}= 550-670 nm) for $ONOO^-$ and a red channel (λ_{ex}= 561 nm, λ_{em}= 680-750 nm) for viscosity and polarity[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Guidelines (Following is our recommended protocol. This protocol only provides a guideline, and should be modified according to your specific needs).

1. For tissue slices imaging, the normal organs (including heart, liver, spleen, lung, and kidney) and tumor are isolated from the mice, then sectioned as 5 μm thicknesses, respectively.
2. These slices are incubated with MQA-P (20 μM) for 30 min, then washed with PBS (pH 7.4) three times, and finally subjected to in vivo imaging using a confocal laser scanning microscope with a green channel (λ_{ex}=405nm, λ_{em}=550-670 nm) for $ONOO^-$ and a red channel(λ_{ex}=561 nm, λ_{em}=680-750 nm) for viscosity and polarity, respectively[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Li Fan, et al. Multifunctional Fluorescent Probe for Simultaneous Detection of ONOO-, Viscosity, and Polarity and Its Application in Ferroptosis and Cancer Models. Anal Chem. 2023 Apr 4;95(13):5780-5787.

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