

Product Data Sheet

Product Name: PBF1 AM

Cat. No.: GC18477

Chemical Properties

Cas. No. 124549-23-1

Chemical Name 4,4'-[1,4,10,13-tetraoxa-7,16-diazacyclooctadecane-7,16-diylbis(5-methoxy-6,2-benzofurandiyl)]bis-1,3-benzenedicarboxylic acid, tetrakis[(acetyloxy)methyl] ester

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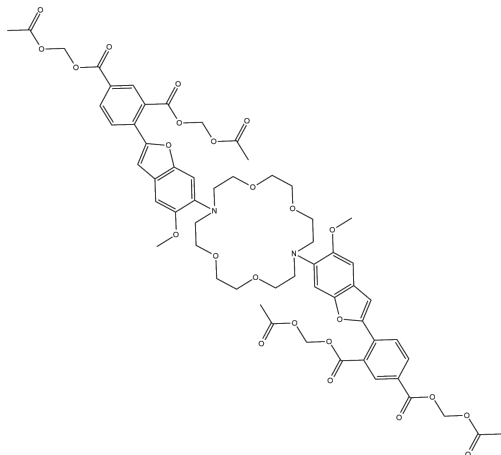
Formula C₅₈H₆₂N₂O₂₄ M.Wt 1171.1

Solubility Soluble in methanol and DMSO Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Intracellular K⁺ determination applying the PBF1 AM

This protocol only provides a guideline, and should be modified according to your specific needs.

Caution: Product has not been fully validated for medical applications. For research use only.

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1. Reagent Preparation

(1) Take an appropriate amount of PBF1 AM solid and dissolve the solid in DMSO to prepare a high-concentration stock solution (such as 1mM).

(2) 1mM PBF1 AM stock solution is diluted into 10 μ M PBF1 AM working solution using PBS buffer. The PBF1 AM working solution should be prepared fresh for immediate use.

2. Cell sample preparation

1.5 $\times 10^4$ cells are inoculated into 96-well culture plates and cultured overnight in complete medium (containing 10% fetal calf serum).

3. PBF1 AM staining

(1) Replace the completed medium with low-serum (1%) medium and incubate for 45 minutes (37°C, 5% CO₂).

(2) Remove the culture medium and wash the cells 2-3 times with PBS.

(3) The cells are then loaded with PBF1 AM by adding 50 μ l of 10 μ M PBF1 AM in each well.

(4) Gently shake the petri dish to ensure the staining solution is evenly distributed.

(5) After 100 minutes, the PBF1 AM working solution is aspirated and discarded, and the cells are washed 2-3 times with PBS.

(6) Add an appropriate amount of PBS buffer to immerse the cells.

4. Fluorescence detection

Excitation ratios of fluorescence at 344 and 400nm, measured at emission 500nm are used to estimate the intracellular content of K⁺.

5. Notes

(1) PBF1 AM is photosensitive. During the operation, avoid light as much as possible.

(2) The staining time and temperature should be optimized according to the cell type and

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experimental requirements.

(3) During the experiment, the experimental conditions such as temperature, should be strictly controlled to ensure the reliability of the experimental results.

References:

[1] Andersson B, Janson V, Behnam-Motlagh P, et al. Induction of apoptosis by intracellular potassium ion depletion: using the fluorescent dye PBF1 in a 96-well plate method in cultured lung cancer cells[J]. Toxicology in vitro, 2006, 20(6): 986-994.

Background

PBF1 AM, the cell membrane permeable fluorescent probe, acts as the K(+)-sensitive dye [1]. The interaction of buforin IIb with Jurkat cell membranes was studied by measuring intracellular K⁺ levels using PBF1 AM [2]. PBF1 AM can be used in flow cytometry analysis to investigate the correlation between cell apoptosis and potassium ion levels[3].

References:

[1] Kasner S E, Ganz M B. Regulation of intracellular potassium in mesangial cells: a fluorescence analysis using the dye, PBF1[J]. American Journal of Physiology-Renal Physiology, 1992, 262(3): F462-F467.

[2] Lee H S, Park C B, Kim J M, et al. Mechanism of anticancer activity of buforin IIb, a histone H2A-derived peptide[J]. Cancer letters, 2008, 271(1): 47-55.

[3] Scoltock A B, Cidlowski J A. Activation of intrinsic and extrinsic pathways in apoptotic signaling during UV-C-induced death of Jurkat cells: the role of caspase inhibition[J]. Experimental cell research, 2004, 297(1): 212-223.

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