

PBFI AM (K⁺ Indicator) 钾离子指示探针

产品编号	产品名称	包装规格
NBS7670-100ug	PBFI AM (K ⁺ Indicator) 钾离子指示探针	2x50ug
NBS7670-500ug	PBFI AM (K ⁺ Indicator) 钾离子指示探针	10x50ug
NBS7670-20x50ug	PBFI AM (K ⁺ Indicator) 钾离子指示探针	20x50ug
NBS7670-1mg	PBFI AM (K ⁺ Indicator) 钾离子指示探针	1mg

【务必注意】：初次使用离子探针的用户，强烈建议配合：Pluronic F-127, Cell Culture Tested 细胞培养级 (NBS2009-1g) 一起使用，以提高探针的水溶性和胞内加载性。

产品简介：

PBFI，英文全名 Potassium-binding Benzofuran Isophthalate，一种 K⁺敏感的荧光探针，用来测定细胞和细胞内区隔 (Intracellular compartments) 的 K⁺水平变化。虽然 PBFI 对 K⁺的选择能力弱于 Ca²⁺指示剂比如 Fura-2,但在其他一价阳离子存在体系中, PBFI 足以检测 K⁺的生理浓度。结合离子后的 PBFI 光谱变化可通过激发光比率测定来分析，其能与使用相同光滤片和仪器检测的探针 Fura-2 共同使用。

PBFI 对 K⁺的解离常数 (K_d) 非常依赖于 Na⁺的存在与否。在不含 Na⁺的体系，PBFI 对 K⁺的 K_d 值为 5.1mM；而在含 135mM K⁺/ Na⁺总浓度 (约为生理离子强度) 的溶液体系，PBFI 对 K⁺的 K_d 值为 44mM；若缓冲液中的 Na⁺用四甲基氯化铵所替代，PBFI 对 K⁺的 K_d 值变为 11mM。氯化胆碱和 N-甲基葡萄糖胺是培养基中另两种可能替代 Na⁺的化合物。虽然 PBFI 对 K⁺的选择性比 Na⁺仅强 1.5 倍，这一选择能力已足以满足检测需求，因为正常情况细胞内 K⁺浓度比 Na⁺高 10 倍左右。

本品为乙酰氧基甲基酯 (Acetoxymethyl ester, AM ester) 形式的 PBFI，CAS NO: 124549-23-1,具有细胞膜渗透性,只需简单孵育即可进入细胞,常用加载浓度范围 5-10μM,加载时间 40min-4h，根据具体的实验要求和细胞类型来调整。

产品特性：

1) 化学名

4,4'-[1,4,10,13-tetraoxa-7,16-diazacyclooctadecane-7,16-diylbis(5-methoxy-6,2-ben

zofurandiyl)]bis- 1,3-benzenedicarboxylic acid, tetrakis[(acetyloxy)methyl] ester

2) 同义名: Potassium-binding Benzofuran Isophthalate Acetoxymethyl ester

3) CAS NO: 124549-23-1

4) 分子式: C₅₈H₆₂N₂O₂₄

5) 分子量: 1171.1

6) 纯度: ≥95%

7) Ex/Em: ~340,380/500 nm

8) 外观: 黄色至橙色粉末

9) 溶解性: 溶于 DMSO (10mM) 和甲醇

保存条件:

-20℃ 避光干燥保存, 2 年有效。

注意事项:

1. PBF1 AM 易受潮, 粉末需干燥保存; 粉末需用无水 DMSO 溶解, 配制储存液(如 10mM), 置于-20℃干燥避光保存, 小量分装避免反复冻融, 至少 3 个月稳定。
2. PBF1 AM 由于水溶性较差, 建议使用 Pluronic F-127 以优化探针的细胞加载效率。通常情况, 将 PBF1 AM 的 DMSO 储存液与等体积 Pluronic F-127 (25% w/v) 混合均匀, 之后即刻加入适量的细胞加载缓冲液 (cell loading buffer) 中达到所需浓度。
3. 为了您的安全和健康, 请穿实验服并戴一次性手套操作。

文献引用:

[1] Tong W et al. Phthalocyanine functionalized poly(glycidyl methacrylate) nano-assemblies for photodynamic inactivation of bacteria. Biomater. Sci., 2019,7, 1905-1918

[2] Li R et al. Biofilm inhibition and mode of action of epigallocatechin gallate against *Vibrio mimicus*. Food Control, Volume 113, July 2020, 107148

Then PBF1 probe was added and incubated at 37 °C for 90 min. The cells were washed, collected and resuspended with PBS buffer. Aliquots (100 μL) of bacterial suspension were transferred to a Corning 96 well black plate, and 100 μL of various concentrations of EGCG were dispensed in the microtiter plate wells.

[3] Liu Y, Zhen W, Wang Y, Song S, Zhang H. Na₂S₂O₈ Nanoparticles Trigger Antitumor Immunotherapy through Reactive Oxygen Species Storm and Surge of Tumor Osmolarity. J Am

Chem Soc. 2020 Dec 30;142(52):21751-21757. doi: 10.1021/jacs.0c09482. Epub 2020 Dec 18. PMID: 33337859.

4T1 cells were inoculated into glass bottom culture dishes for 24 h. Then, adding PNSO NPs medium solution (80 $\mu\text{g/mL}$) to continue co-culture for 4 h. The treated 4T1 cells were further incubated with 10 μM Na⁺ indicator SBFI AM in 0.04% Pluronic F-127 and the fluorescence signal was measured by CLSM.

[4] Liang Z, Yang Y, Yu G, et al. Engineering aluminum hydroxyphosphate nanoparticles with well-controlled surface property to enhance humoral immune responses as vaccine adjuvants. *Biomaterials*. 2021 Jun;275:120960. DOI: 10.1016/j.biomaterials.2021.120960.

[5] BMDMs were treated with AAHPs (250 $\mu\text{g/mL}$) in the presence of LPS at 500 ng/mL for 5 h. Then PBFI AM was added to the cells at the concentration of 10 μM , and cells were incubated at 37 °C for 1h. Triton X-100 (0.2%) treated cells were used as controls. The fluorescence of PBFI AM was measured at the Ex/Em of 340/615 nm. The data were expressed as relative fluorescence intensity (RFI) defined as the fluorescence intensity of AAHPs-treated BMDMs normalized to the intensity of control cells.

[6] Jia Y, Yang B, Shi J, Fang D, Wang Z, Liu Y. Melatonin prevents conjugative transfer of plasmid-mediated antibiotic resistance genes by disrupting proton motive force. *Pharmacol Res*. 2022 Jan;175:105978. doi: 10.1016/j.phrs.2021.105978. Epub 2021 Nov 21. PMID: 34813930.

As for the detection of intracellular K⁺ concentration, the PBFI-AM (K⁺ indicator) fluorescence dye labeled cells (10 μM) in the presence of.....

本产品仅用于生命科学研究，不得用于医学诊断及其它用途！

相关产品：

产品编号	产品名称	包装规格
NBS7670-100ug	PBFI AM (K+ Indicator)钾离子指示探针	2×50μg
NBS7671-1mg	PBFI TMA+ Salt (K+ Indicator)钾离子指示探针	1mg
NBS7672-100ug	Enhanced Potassium Green-2 AM 钾离子指示探针	2×50μg
NBS7673-500ug	Enhanced Potassium Green-2 TMA+ Salt 钾离子指示探针	500μg
NBS7674-100ug	Enhanced Potassium Green-4 AM 钾离子指示探针	2×50μg
NBS7675-100ug	Enhanced Potassium Green-4 TMA+ Salt 钾离子指示探针	2×50μg
NBS7676-100ug	SBFI AM (Na+ Indicator)钠离子指示探针	2×50μg
NBS7677-100ug	Enhanced NaTrium Green-2 AM 钠离子指示探针	2×50μg