DiBAC$_4$(3), DiSBAC$_2$(3), DiBAC$_4$(5)

Translational membrane potential dye that redistributes within the cell membrane when membrane potential changes

**Product Information**

**Name:** DiBAC$_4$(3)
- bis-(1,3-dibutylbarbituric acid)trimethine oxonol, sodium salt
- **Catalog Number:** FP-46600A, 25 mg
- **Structure:** C$_{27}$H$_{39}$N$_4$NaO$_6$
- **Molecular Weight:** MW= 538.61
- **Soluble:** in DMSO or EtOH
- **Absorption / Emission:** $\lambda_{\text{exc}}$/$\lambda_{\text{em}}$ (MeOH) = 493 / 516 nm
- **Extinction Coefficient:** 146 000 cm$^{-1}$M$^{-1}$

**Name:** DiSBAC$_2$(3)
- bis-(1,3-diethylthiobarbituric acid)trimethine oxonol
- **Catalog Number:** FP-466039, 25 mg
  - FP-46603A, 100 mg
- **Structure:** C$_{19}$H$_{24}$N$_4$O$_4$S$_2$
- **Molecular Weight:** MW= 436.54
- **Soluble:** in DMSO or EtOH
- **Absorption / Emission:** $\lambda_{\text{exc}}$/$\lambda_{\text{em}}$ (MeOH) = 535 / 560 nm
- **Extinction Coefficient:** 170 000 cm$^{-1}$M$^{-1}$

**Name:** DiBAC$_4$(5)
- 2,4,6(1H,3H,5H)-Pyrimidinetrione, 1,3-dibutyl-5-(5-1,3-dibutyl-1,2,3,4- tetrahydro-6-hydroxy-2,4-dioxo-5- pyrimidinyl)-2,4-pentadienylidene)
- **Catalog Number:** FP-465992, 25 mg
- **Structure:** C$_{29}$H$_{42}$N$_4$O$_6$
- **Molecular Weight:** MW= 542.67
- **Soluble:** in DMSO or EtOH
- **Absorption / Emission:** $\lambda_{\text{exc}}$/$\lambda_{\text{em}}$ (MeOH) = 590 / 616 nm
- **Extinction Coefficient:** 160 000 cm$^{-1}$M$^{-1}$

Oxonols may require addition of a base to be soluble

**Storage:** Store at +4°C, dessicated, protected from light, or at -20°C for long term storage. [K]
Introduction

The bis-barbituric acid oxonols, often referred to as DiBAC dyes, form a family of spectrally distinct potentiometric probes with excitation maxima at approximately 490 nm (DiBAC4(3)), 530 nm (DiSBAC2(3)) and 590 nm (DiBAC4(5)). The dyes enter depolarized cells where they bind to intracellular proteins or membranes and exhibit enhanced fluorescence and red spectral shifts. Increased depolarization results in more influx of the anionic dye and thus an increase in fluorescence. Conversely, hyperpolarization is indicated by a decrease in fluorescence. Potential-dependent fluorescence changes generated by DiBAC4(3) are typically ~1% per mV. The long-wavelength DiSBAC2(3) probe has frequently been used in combination with the UV light-excitable Ca2+ indicators indo-1 or fura-2 for simultaneous measurements of membrane potential and Ca2+ concentrations. Interactions between anionic oxonols and the cationic K+-valinomycin complex complicate the use of this ionophore to calibrate potentiometric responses. Like the bis-isoxazolone oxonols, the DiBAC dyes are excluded from mitochondria because of their overall negative charge, making them superior to carbocyanines for measuring plasma membrane potentials by flow cytometry. A new and potentially very important application for DiBAC4(3) is its use in high throughput drug screening.

Directions for use

Protocol may be found in the literature.

References

- Epps DE, et al., « Characterization of the steady-state and dynamic fluorescence properties of the potential-sensitive dye bis-(1,3-dibutylbarbituric acid)trimethine oxonol (DiBAC4(3)) in model systems and cells. », Chem Phys Lipids, 69, 137 (1994)
- Pratap PR, et al., « Two mechanisms by which fluorescent oxonols indicate membrane potential in human red blood cells. », J. Biophys J 57, 835 (1990)

Related products

- Oxonol V, FP-352022
- Oxonol VI, FP-393141
- Indo-1 AM, FP-42775A
- Fura-2 AM, FP-42776C
- CCCP, 091640
- N,N'-dicyclohexylcarbodiimide, 01202A
- Propodium iodide, FP-31238B
- DMAO, green nucleic acid stain, FP-CA8150
- 2-NBDG, FP-M1963A

Ordering information

Catalog size quantities and prices may be found at http://www.fluoprobes.com
Please inquire for higher quantities (availability, shipment conditions).
For any information, please ask: Fluoprobes / Interchim; Hotline: +33(0)4 70 03 73 06

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