FluoProbes®

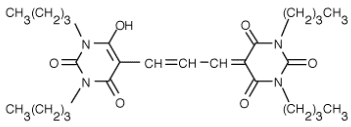
FT-46600A

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

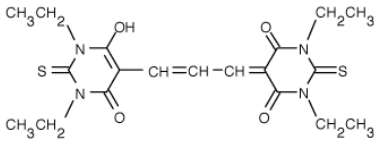
Translational membrane potential dye that redistributes within the cell membrane when membrane potential changes

Product Information

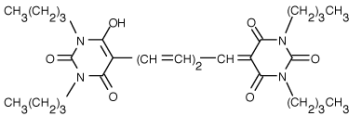
Name :	**DiBAC$_4$(3)** bis-(1,3-dibutylbarbituric acid)trimethine oxonol, sodium salt
Catalog Number :	FP-46600A, 25 mg
Structure :	$C_{27}H_{39}N_4NaO_6$
Molecular Weight :	MW= 538,61
Soluble:	in DMSO or EtOH
Absorption / Emission :	$\lambda_{exc}\backslash\lambda_{em}$ (MeOH) = 493 / 516 nm
Extinction 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 :	$C_{19}H_{24}N_4O_4S_2$
Molecular Weight :	MW= 436.54
Soluble:	in DMSO or EtOH
Absorption / Emission :	$\lambda_{exc}\backslash\lambda_{em}$ (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 :	$C_{29}H_{42}N_4O_6$
Molecular Weight :	MW= 542.67
Soluble:	in DMSO or EtOH
Absorption / Emission :	$\lambda_{exc}\backslash\lambda_{em}$ (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 (K)

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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 $DiBAC_4(3)$ is its use in high throughput drug screening.

Directions for use

Protocol may be found in the literature.

References

- **Berney M**. *et al*., Flow-cytometric study of vital cellular functions in *Escherichia coli* during solar disinfection (SODIS), *Microbiology*, 152: 1719 - 1729 (2006) Article
- **Brauner T**, *et al.*, « Comparative measurements of membrane potentials with microelectrodes and voltage-sensitive dyes. », *Biochim Biophys Acta,* **771**, 208 (1984)
- **Burns D.** *et al*: "Calcitonin gene-related peptide elevates calcium and polarizes membrane potential in MG-63 cells by both cAMP-independent and -dependent mechanisms." *Am J Physiol Cell Physiol* **287**, C457-67 (2004)
- **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)
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- **Lloyd D**. *et al*., The plasma membrane of microaerophilic protists: oxidative and nitrosative stress, *Microbiology*, 150: 1183 - 1190 (2004) Article
- **Pratap PR,** *et al.*, « Two mechanisms by which fluorescent oxonols indicate membrane potential in human red blood cells. », *JC. Biophys J* **57**, 835 (1990)
-**Zohar R**. *et al*.: "Increased cell death in osteopontin-deficient cardiac fibroblasts occurs by a caspase-3-independent pathway." *Am J Physiol Heart Circ Physiol* **287**, H1730-9 (2004)

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 quantites and prices may be found at http://www.fluoprobes.com
Please inquire for higher quantities (avaibility, shipment conditions).
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