FT-AM626A (+NT_AMesters)

High Calcium Indicators

Product Information

cat.number	MW ($g \cdot mol^{-1}$) *CAS*	$\lambda_{exc}\backslash\lambda_{em}$ max. Free (nm)	$\lambda_{exc}\backslash\lambda_{em}$ max. High Ca^{2+} (nm)	mol. abs. ($M^{-1}cm^{-1}$)	Kd (µM)	Soluble in
Fura-2FF, AM ester FP-AM629A	1025.84 *348079-12-9*		360 / 505 (a)	33 000		DMSO
Fura-2FF, K salt FP-AM627A	853.97		360 / 505	33 000	35	Water >pH6
Fluo-4FF, AM ester FP-F9928A	1118.9	456 / weak ε=25 000	494 / 516 (a)	75 000		DMSO
Fluo-4FF, K salt FP-R1264A	931.1	491 / weak ε=72 000	494 / 516	75 000	9.7	Water >pH6
Fluo-5F, AM ester FP-M2040A		456 / weak ε=24 000	494 / 518 (a)	74 000		DMSO
Fluo-5F, K salt FP-M2039A	931.1	491 / weak ε=71 000	494 / 518	74 000	2.3	Water >pH6
Fluo-5N, AM ester FP-M2023A	1127.9	456 / weak ε=26 000	493 / 518 (a)	74 000		DMSO
Fluo-5N, K salt FP-M2022A	958.1	491 / weak ε=72 000	493 / 518	74 000	90	Water >pH6
Indo-1FF, AM ester FP-AM628A	1031.9		350 / 475 (a)	33 000		DMSO
Indo-1FF, K salt FP-AM630A	862.04		350 / 475	33 000	33	Water >pH6
Rhod-FF, AM ester FP-BB4130	1146		552 / 580 (a)		19	DMSO
Rhod-FF, K salt FP-BB4140	891		552 / 580		19	Water >pH6
Bapta-FF, AM ester FP-AM934A	766			5000	60	DMSO
Bapta-FF, free acid FP-AM932A	477			5000	60	Water >pH6
DF-Bapta, AM ester (b) FP-46742A	800.68					DMSO
DF-Bapta, K salt © FP-46743A	664.8 *156027-00-8*				0.635 (pH7.0)	Water >pH6

(a) after hydrolysis
(b) $\lambda_{exc}\backslash\lambda_{em}$ (EtOH) = 290 nm / none
(c) $\lambda_{exc}\backslash\lambda_{em}$ (pH7.2) = 289 nm / 263

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Storage: **Indicator salts** can be stored desiccated and protected from light at room temperature, +4°C or –20°C >1 year.
AM esters can be stored desiccated and protected from light at –20°C > 6 months.

Introduction

High Ca^{2+} concentrations, present in some organelles (mitochondria, vacuoles) and in excitable cells (fibroblast i.e.), were hardly detected: standard dyes Fluo-3, Fluo-4 and Rhod-2 have too affinity for Ca^{2+}, so usually Furaptra was preferred. However, measurements needed corrections because of it's magnesium affinity, especially in mitochondria (Golovina 1997).
Now, new modified forms of the standard dyes are available, eliciting similar fluorescence properties ($\lambda_{exc}\backslash\lambda_{em}$, photostability, and QY), but offering several advantages (London 1996). Benefits are:

- Reduced buffering of intracellular calcium
- Suitable for shorter lived transients (reduced perturbation)
- Higher K_d
- Absence of Mg-effects

High Ca_{2+} indicator are available as Acetoxymethyl ester. They are membrane-permeant and thus can be loaded into cells by simple incubation of the cells or tissue preparation in a buffer containing the AM ester. Pluronic® F-127, a mild non-ionic detergent, can facilitate AM esters loading. The AM esters themselves do not bind to Ca2+. However, once they have entered the cells, they are rapidly hydrolyzed by intracellular esterases into the parent Ca2+ indicators, thus becoming reactive to Ca2+.
High Ca_{2+} indicator are also available as salts which are membrane-impermeant, but can be loaded into cells via microinjection or scrape loading.

Directions for use

Handling and Storage

Stock solutions of the salts may be prepared in distilled water or aqueous buffers (pH>6) and stored frozen (-20°C) and protected from light; these solutions should be stable for at least six months.

AM esters should be reconstituted in anhydrous dimethylsulfoxide (DMSO) then used as soon as possible thereafter (within a week) to avoid hydrolysis with subsequent loss of cell loading capacity. DMSO stock solutions of AM esters should be frozen and dessicated and protect from light.

Protocols may found in the literature, and in our technical notice NT-AM_esters.

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Fluo-3FF

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Fura-2FF, AM ester	FP-AM629A	500 µg	FP-AM629B	10x50 µg
Fura-2FF, K salt	FP-AM627A	500 µg		
Fura-5F, AM ester	FP-M2040A	10x50 µg		
Fura-5F, K salt	FP-M2039A	500 µg		
Fluo-5N, AM ester	FP-M2023A	10x50 µg		
Fluo-5N, K salt	FP-M2022A	500 µg		
Indo-1FF, AM ester	FP-AM628A	500 µg		
Indo-1FF, K salt	FP-AM630A	500 µg		
Rhod-2FF, AM ester	FP-BB4130	10x50 µg		
Rhod-2FF, K salt	FP-BB4140	500 µg		

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Bapta-FF, AM ester	FP-AM934A	10 mg
Bapta-FF, free acid	FP-AM932A	10 mg
DF-Bapta, AM ester	FP-46742A	10 mg
DF-Bapta, K salt	FP-46743A	50 mg

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