EGTA tetrasodium salt *10 mM aqueous solution*

Catalog number: 21008
Unit size: 10 mL

Component	Storage	Amount
EGTA tetrasodium salt *10 mM aqueous solution*	Freeze (<-15 °C), Minimize light exposure	10 mL

OVERVIEW

EGTA (1,2-bis(o-aminophenoxy)ethane-N,N,N',N'-tetraacetic acid) is a water-soluble and cell-impermeable calcium chelator. It has high selectivity to calcium. Compared to EDTA, EGTA has a lower affinity for magnesium, making it more selective for calcium ions. It is useful in buffer solutions that resemble the environment in living cells where calcium ions are usually at least a thousand fold less concentrated than magnesium. The pKa for binding of calcium ions by tetrabasic EGTA is 11.00, but the protonated forms do not significantly contribute to binding, so at pH 7, the apparent pKa becomes 6.91.

AT A GLANCE

Important

Expiration date is 12 months from the date of receipt.

SAMPLE EXPERIMENTAL PROTOCOL

Sample Protocol for Calcium Measurement:

Titrate the concentration of free Ca^{2+} in solution by mixing different amounts of K_2EGTA and CaEGTA. The reactions of these solutions with Fluo-3, Fluo 4, Fluo-8, Cal-520, or Calbryte 520 dye should be at room temperature, pH 7.2 and 100 mM KCl. Under these conditions, the K_d for EGTA is 150 nM. Measure the Fluo-3, Fluo 4, Fluo-8, Cal-520, or Calbryte 520 fluorescence intensity with a fluorescence microplate reader at Ex/Em = 490/525 nm.

1. Mix the relative volumes of K_2EGTA (Cat.# 21008) and CaEGTA according to the following table.

Sample #	Volume K_2EGTA, uL	Volume CaEGTA, uL	Calculated free Ca^{2+}, uM	RFU
zero (blank)	1000	0	0	0
1	900	100		
2	800	200		
3	700	300		
4	600	400		
5	500	500		
6	400	600		
7	300	700		
8	200	800		
9	100	900		

2. Calculate the concentration of free Ca^{2+} in each solution using the following formula:

$[Ca^{2+}]_{free} = K_d^{EGTA} \times \{[CaEGTA]/[K_2EGTA]\}$ (Note: the K_d of EGTA is 150 nM).

3. Add 1 uL of 1 mM Fluo-3, Fluo 4, Fluo-8, Cal-520, or Calbryte 520 into each solution including the blank.

4. Read the fluorescence intensity of each solution with a fluorescent microplate reader at Ex/Em = 490/525 nm.

EXAMPLE DATA ANALYSIS AND FIGURES

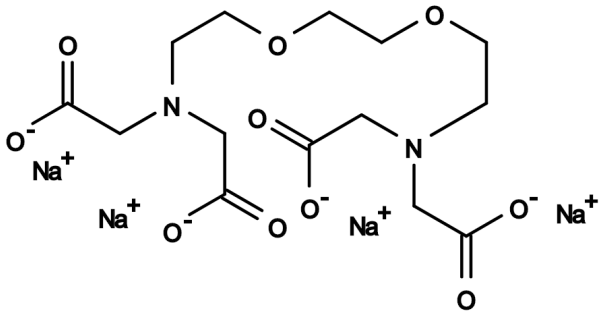

Figure 1. Chemical structure for EGTA tetrasodium salt *10 mM aqueous solution*

DISCLAIMER