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Citrate-Phosphate Buffer

In 1 collection

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Protocol status: Working
We use this protocol and it's working

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Abstract

A buffer solution has the function of resisting changes in pH even when adding powerful acids or bases. However, in the physiological environment the buffered system also provides cofactors for enzymatic reactions, critical salts and even essential nutrients for cells and tissues. Therefore, when trying to reproduce biological conditions in vitro, we must make the appropriate choice of the buffer. After all, it will provide the appropriate medium in which reactions will occur.

Materials

- Deionized Water
- pH Meter (sensitive)
- Citric Acid
- Dibasic Sodium Phosphate (dihydrate and heptahydrate)

Safety warnings

Wear personal protective equipment: gloves, lab coat and mask.

Before start

Organize your workspace.

Make sure all solutions and equipment are available.

Citrate-Phosphate Buffer

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Note

pH range: pH 2.6 to pH 7.0

(a) 0.1 M Citric acid; 19.21 g L^{-1} (M.W. 192.1 g mol^{-1})
(b) 0.2 M Dibasic sodium phosphate; 35.6 g L^{-1} (dihydrate; M.W. 178.0 g mol^{-1}) or 53.6 g L^{-1} (heptahydrate; M.W. 268.0 g mol^{-1})

Mix citric acid and sodium phosphate solutions in the proportions indicated and adjust the final volume to 100 mL with deionized water.

	mL of Citric acid	44.6	39.8	35.9	32.3	29.4	26.7	24.3	22.2	19.7	16.9	13.6	6.5
	mL of Sodium phosphate	5.4	10.2	14.1	17.7	20.6	23.3	25.7	27.8	30.3	33.1	36.4	43.6
	pH	2.6	3.0	3.4	3.8	4.2	4.6	5.0	5.4	5.8	6.2	6.6	7.0

2 Adjust the final pH using a sensitive pH meter