Interchim Innovations

Interbiotech - BioScience Innovations

Dialysis for crystallisation

Introduction to dialysis for Crystallization

Crystallization by dialysis is an easy variation to the typical vapor diffusion method used to grow crystals. In the dialysis method the sample in question is separated from the "precipitant" by a semi-permeable membrane which allows small molecules such as ions, additives, buffers, and, salts to pass but prevent biological macromolecules from crossing the membrane. Equilibration kinetics depend upon the molecular weight cut-off of the Dialysis Membrane, the precipitant, the ratio of the volume, the concentration of the components inside and outside of the dialysis cell, and the geometry of the cell.

Technical Tip - **Different dialysis gemotry cells were proposed**:

•Macrodialysis

The sample is loaded into dialysis tubing of the appropriate molecular weight cut-off and is dialysed against the appropri-ate reservoir solution. This method typically requires at least 100 microliters of sample and can be performed with liters of sample in large dialysis tubing.

•Zeppenzauer Cells

Capillary tubes are closed with dialysis tubing or gel plugs. See Zeppenzauer, M. 1971, Methods In Enzymology, 22, 253.

•Microcap Dialysis

The sample is placed in a glass capillary with one end sealed with wax, the other with Dialysis Membrane. The tube is placed in a microcap/small centrifuge tube filled with the ap-propriate reservoir. See Crystallization of nucleic acids and proteins, a practical approach, Edited by A. Ducruix and R. Giege, Oxford University Press, 1992.

•Double Dialysis

This method reduces the rate of equilibration and can pro-vide enhanced control over the crystallization of the sample. Simply put, a Dialysis Button is prepared and placed inside a reservoir sealed with a Dialysis Membrane, which is in turn placed inside another reservoir. Confused? See Thomas, D.H., et al, 1989, Protein Engineering, 2, 489

•Dialysis buttons

This method offer a convenient and versatile method to perform Crystallization by dialysis.

Dialysis Buttons

Description

In the dialysis method, the sample in question (i.e. protein) is separated from the "precipitant" by a semi-permeable membrane which allows small reagent molecules to pass but prevents biological macromolecules from crossing the membrane. The sample is simply deposited in a defined-volume chamber, covered by a membrane, closed tightly and allowed to dialyze to reach equilibrium in desired buffer/temperature for crystallization of sample. The crystals are recovered for crystallography analysis.

Applications

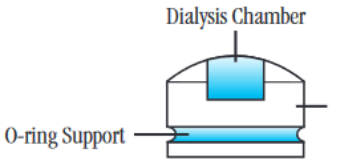
Crystallization by dialysis, protein folding, & small volume sample dialysis

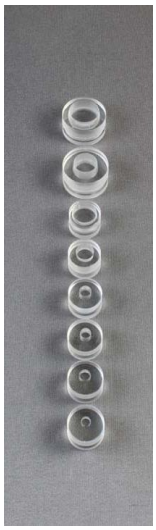
•Dialysis Buttons

Features

- Low volume dialysis - 8 sizes
- Fits in 24 well plates
- Reusable

HR3-336	Dialysis Buttons Sampler	QI6390, 5 of each size listed below
HR3-314	5 µl Dialysis Button	QI6300, 50 pack
HR3-316	10 µl Dialysis Button	QI6310, 50 pack
HR3-318	15 µl Dialysis Button	QI6320, 50 pack
HR3-320	20 µl Dialysis Button	QI6330, 50 pack
HR3-326	50 µl Dialysis Button	QI6350, 50 pack
HR3-328	100 µl Dialysis Button	QI6360, 50 pack
HR3-330	200 µl Dialysis Button	QI6370, 50 pack
HR3-332	350 µl Dialysis Button	QI6380, 50 pack





•Membranes for Dialysis button

pre-cut membranes available with the following molecular weight cutoffs:

HR3-338	Dialysis Membrane Discs ,	cutoff 3 500	QI6400, 50 pack	*Alt.:O31460-132494*
HR3-344	Dialysis Membrane Discs ,	cutoff 6 000 to 8 000	QI6410, 50 pack	*Alt.:O31430-132482*
HR3-346	Dialysis Membrane Discs ,	cutoff 12 000 to 14,000	QI6420, 50 pack	*Alt.548160-132498*

Spectra/Por® regenerated cellulose dialysis membrane discs are 33 mm, circular.

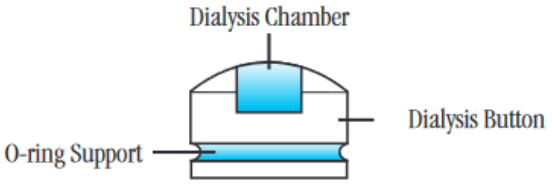
•Applicator for Dialysis Buttons

HR4-348 Small Applicator ANS750, 1u
(for use with small Dialysis Buttons 5-100 µl)

The Applicator makes easier work of applying the dialysis membrane and O-ring to Dialysis Buttons. It positions and holds the dialysis membrane on the buttons and also allows the easy application and position of the O-ring to secure the dialysis membrane onto the Dialysis Button. The Applicator for Dialysis Buttons is manufactured of glass.

Detailled information

The Dialysis Buttons are machined from transparent Perspex®. The button has a chamber which varies from 5 to 350 microliters depending upon which size button one chooses to use. See Figure 1.

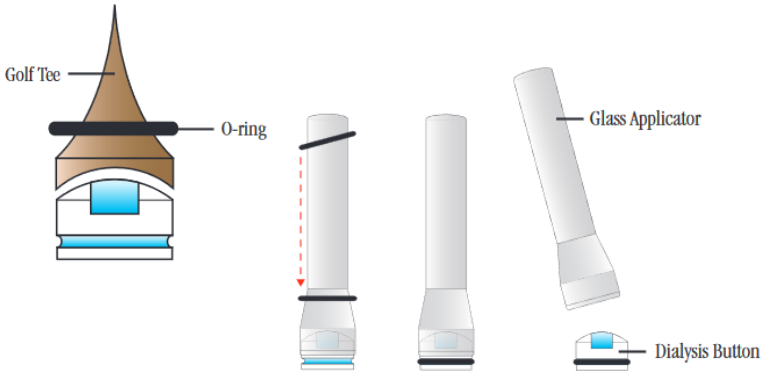


The sample is placed in this chamber so as to create a slight dome of liquid at the top edge of the button. A Dialysis Membrane (having the appropriate molecular weight cut-off) is placed over the top of the button/sample and is held in place with an O-ring. See figure 2. The O-ring is held in place by a groove in the dialysis button.

Dialysis buttons are notoriously tricky to set up since beginners often trap air bubbles between the sample solution and the membrane which impedes dialysis. With a little practice using the "Applicator for Dialysis Buttons" one can master the technique.

Dialysis Buttons are supplied with O-rings and a Golf Tee Applicator. The package of Dialysis Buttons does not include Dialysis Membranes.

See Technical sheet.



Related products - alternative dialysis devices for 0.3 to 10ml, that do not require syringes nor floating boys:

* Dialysis tool- - selection guide
* Products HighLights Overview

Information inquire

Reply by Fax : +33 (0) 4 70 03 82 60 or email at interbiotech@interchim.com

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