VIVAproducts
Protein Purification and Separation Technologies

prochem
Advanced Protein Separations

BJP

CLINICAL CONCENTRATORS

TECHNICAL INFORMATION & OPERATING INSTRUCTIONS

BJP-5, BJP-10 & BJP-20

BJP concentrators offer a convenient way to prepare multiple clinical samples for analysis by electrophoresis or immunoassay. This is done without a centrifuge, pressure or vacuum source. Absorbent pads pull solvent through the ultrafilter concentrating the sample. A dead stop pocket at the bottom of each cell minimizes the chance to concentrate the sample to dryness. The BJP clinical concentrators are intended for *in vitro* diagnostic (IVD) applications and are labeled accordingly.

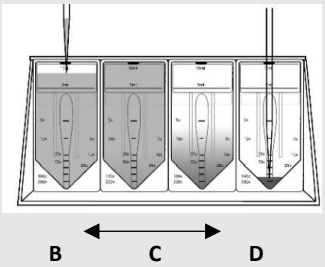
Operation: Concentrating macromolecules

A. Measure sample total protein to determine the desired concentration factor. (For urine samples see below "Suggested Concentration Factors").

B. Pipette sample through aperture at the top of the device. Device can be left unattended until desired concentration is achieved.

C. Solvent and micromolecules are pulled through the membrane by a high capacity absorbent, a dead stop feature prevents the sample from concentrating to dryness.

D. Once the desired volume is achieved, the concentrate is withdrawn using Pasteur, thin plastic or gel loader type pipettes. The sample is now ready for further analysis.



BJP Clinical Applications

- Concentration of urine prior to electrophoresis for diagnosis of multiple myeloma and amyloidosis.
- Concentrate spinal fluid prior to electrophoresis for diagnosis of meningitis and multiple sclerosis.
- Concentrate bacterial antigens in urine *(Legionella, Pneumonia)* before immunoassay.

Features	Benefits
Integrated dead stop	Minimal risk of sample concentration to dryness
Uses plastic instead of glass Pasteur pipettes	No glass breakage during sample removal
Black print for graduations	Easy to read
Large volume models hold up to 20 mL	Concentrate 100X in one cell and still have 100 µl for IFE tests
Available as individual units or as 8 test blocks	Individual units may be disposed after use. Blocks may have to be stored with sample residue

Recovering Dry Samples

BJP concentrators have an impermeable concentrate pocket (dead stop) which impedes concentration to dryness. However, if the concentrate inadvertently remains too long in the concentrator, the remaining solvent will eventually evaporate and the sample may go to dryness. Should this occur, proteins may be retrieved to solution by pipetting approximately 100 µl of buffer in and out of the concentrate pocket several times.

Concentration Factors

If you are not filling your unit to the full level, Table 1 will help determine the concentration factor you want to achieve. First, locate the row with the sample volume for your BJP model. Then, locate your desired concentration factor in that row. Finally, read the Graduation Mark value at the top of that column. This is where your sample should be removed. For instance, using the BJP-10, if the starting volume of the sample you are concentrating is 2.0 mL and you need to concentrate to 20X, match the 2 mL starting volume at left and look across until you reach the concentration factor you need to reach (20X) and look at the top of that column. Your 2 mL sample will be concentrated to 20X when it reaches the 100X graduation mark on the unit.

TABLE 1: Concentration Factors

BJP-20 Start Vol.	Graduation Mark					
	5X	**10X**	**25X**	**50X**	**100X**	**200X**
20 mL	10X	20X	50X	100X	200X	400X
15 mL	7.5X	15X	37.5X	75X	150X	300X
10 mL	5X	10X	25X	50X	100X	200X
5 mL	2.5X	5X	12.5X	25X	50X	100X
2 mL	--	2X	5X	10X	20X	40X
BJP-10 Start Vol.	**Graduation Mark**					
	5X	**10X**	**25X**	**50X**	**100X**	**200X**
10 mL	5X	10X	25X	50X	100X	200X
5 mL	2.5X	5X	12.5X	25X	50X	100X
2.5 mL	1.3X	2.5X	6.3X	12.5X	25X	50X
2 mL	--	2X	5X	10X	20X	40X
1.5 mL	--	1.5X	3.8X	7.5X	15X	30X
1 mL	--	--	2.5X	5X	10X	20X
BJP-5 Start Vol.	**Graduation Mark**					
	5X	**10X**	**25X**	**50X**	**100X**	**200X**
5 mL	5X	10X	25X	50X	100X	--
4 mL	4X	8X	20X	40X	80X	--
3 mL	3X	6X	15X	30X	60X	--
2.5 mL	2.5X	5X	12.5X	25X	50X	--
2 mL	2X	4X	10X	20X	40X	--
1.5 mL	1.5X	3X	7.5X	15X	30X	--
1 mL	--	2X	5X	10X	20X	--

Improving Speed of Concentration

Speed of filtration is affected by several parameters including temperature, pH and protein concentration. Some factors will slow filtration:

- Speed will increase proportionally to ambient temperature. Should you require faster concentration, place the concentrator near a source of heat.
- An acidic sample with a pH of less than 5 will take longer to concentrate than a neutral sample. Adjustment to a physiological pH will result in faster filtration.
- Suspended particles will tend to foul the filter element and slow filtration speed. Prefiltration with a syringe filter or centrifugation will clarify the sample and result in faster filtration speed and improved analytical results following concentration.
- Initial protein concentration levels will have a significant effect on concentration speed. A highly dilute sample will concentrate rapidly. Once protein concentration exceeds 2 G/dL the speed of filtration will rapidly decrease.

Suggested Concentration Factors for Urine Samples

For a BJP Concentration Factor Calculator please visit: *www.vivaproducts.com/calculator.html*

Suggested CAP Validation Procedures

For Recommended Procedures please visit: *www.vivaproducts.com/downloads/lab-procedure-performing-the-test.pdf*
To download the CAP Calculation Table please visit: *www.vivaproducts.com/downloads/cap-recovery-table.xls*

TECHNICAL SPECIFICATIONS

Concentration Capacity	BJP-5	BJP-10	BJP-20
Normal Volume	5 mL	10 mL	10 mL
With optional expansion reservoir (BJPA-ER20)	NA	NA	20 mL
Dimensions			
For BJP-5/40, BJP-10/40 (8 test blocks)			
Width	147 mm	147 mm	NA
Height	94 mm	94 mm	NA
Depth	70 mm	70 mm	NA
For BJP-5/30 & 5/100, BJP-10/30 & 10/100, BJP-20/30 & 20/100 (All individual test units)			
Width	38 mm	38 mm	45 mm
Height	100 mm	100 mm	100 mm
Depth	24 mm	24 mm	27 mm
Active membrane area	25 cm^2	25 cm^2	28 cm^2
Dead stop volume	50 µL	50 µL	50 µL
Materials of Construction			
Membrane	Polyethersulfone (7,500 MWCO)		
Reservoir	Acrylonitrile Butadiene Styrene Polymer		

Typical Performance	Time to concentrate 10x (minutes), 20°C					Concentrate recovery %		
7,500 MWCO PES	BJP-5	BJP-10	BJP-20	BJP-20		BJP-5	BJP-10	BJP-20
Start volume	5 mL	10 mL	10 mL	20 mL		5 mL	10 mL	10 mL
Albumin (66,000 MW)(0.25 mg/mL)	30	60	55	110**		92%	92%	92%
IgG (160,000 MW)(0.25 mg/mL)	35	70	65	130**		65%	68%	68%
	Time to concentrate 50x (minutes), 20°C					Concentrate recovery %		
Albumin (66,000 MW)(0.25 mg/mL)	40	80	75	150**		90%	90%	90%
IgG (160,000 MW)(0.25 mg/mL)	45	90	85	170**		56%	60%	60%
*** All 20 mL samples start at 0.10 mg/mL*								

ORDERING INFORMATION ***(Individual devices MUST be used with Acrylic stand BJPA-AS which must be ordered separately)***

Type of Device	No. Tests	BJP-5	BJP-10	BJP-20
Individual device (no pipettes)	30	BJP-5/30	BJP-10/30	BJP-20/30
Individual device (w/pipettes)	30	BJP-5/30P	BJP-10/30P	BJP-20/30P
Individual device (no pipettes)	100	BJP-5/100	BJP-10/100	BJP-20/100
Individual device (w/pipettes)	100	BJP-5/100P	BJP-10/100P	BJP-20/100P
8 test block (no pipettes)	40	BJP-5/40	BJP-10/40	
8 test block (w/pipettes)	40	BJP-5/40P	BJP-10/40P	

ACCESSORIES

Plastic disposable pipettes (qty of 250)	BJPA-P250
Plastic disposable pipettes (qty of 100)	BJPA-P100
Plastic disposable pipettes (qty of 40)	BJPA-P40
Plastic disposable pipettes (qty of 30)	BJPA-P30
Expansion reservoirs for use with BJP-20 devices (qty of 10)	BJPA-ER20
Acrylic stand for BJP individual units	BJPA-AS

Vivaproducts • 521 Great Road • Littleton, MA 01460 • Toll-free phone (U.S. & Canada) 800-456-4633 • Outside U.S. & Canada: 978-952-6868 • Fax 978-952-6143