DATA SHEET

BabyBio S™
BabyBio Q™
BabyBio DEAE™

BabyBio S, BabyBio Q and BabyBio DEAE are pre-packed, ready to use ion exchange columns for easy and convenient purification of proteins.

- **Rapid method screening and separations**
- **High binding capacity and purity**
- **Easy ready to use columns**

Media description

BabyBio S, BabyBio Q and **BabyBio DEAE** columns are pre-packed with cross-linked agarose based ion exchange media. Products can successfully be used in the purification of proteins in biotechnology research and method development.

BabyBio S is a strong cation exchanger while BabyBio Q is a strong anion exchanger and BabyBio DEAE is a weak anion exchanger. BabyBio S has a sulfonate group, BabyBio Q a quartenary amine group and BabyBio DEAE a diethylaminoethyl group for ion exchange chromatography. The beads in the columns maintain high capacity over broad pH ranges. The functional groups are coupled to the beads via chemically stable linkages.

Connecting columns in series up to five columns allow simple scale-up in lab-scale. Column characteristics are listed in the table below.

Column description

The plastic column is made from biocompatible polypropylene, which does not significantly interact with biomolecules. The top and bottom filters are polyethylene. The ready to use BabyBio columns are delivered with plugs in the inlet and a cut-off end at the outlet. The columns can be connected to a syringe, pump or chromatography system using fingertight fittings (coned 10–32) for 1/16” o.d. tubing.

Bio-Works

Applications

BabyBio columns can be useful in the separation of proteins in biotechnology research. Columns maintain high capacity over broad pH ranges.

Below, three examples are presented. Concanavalin A, ribonuclease A, α-Chymotrypsinogen and lysozyme separated on BabyBio S columns in Figure 1. Apo-transferrin, β-lactoglobulin and pepsin using BabyBio Q and BabyBio DEAE columns are shown in Figure 2.

Binding buffer: 50 mM MES, pH 6.0
Elution buffer: 1 M NaCl, 50 mM MES, pH 6.0
Sample: 1.5 mg/ml Concanavalin A, 1.5 mg/ml ribonuclease A, 0.5 mg/ml α-chymotrypsinogen A and 0.5 mg/ml lysozyme in binding buffer
Sample volume: 0.25 ml in the 1 ml column and 1.25 ml in the 5 ml column
Flow: 0.5 ml/min (75 cm/h) in the 1 ml column, and 2.5 ml/min (75 cm/h) in the 5 ml column
Gradient: 0–43% B in 10 CV

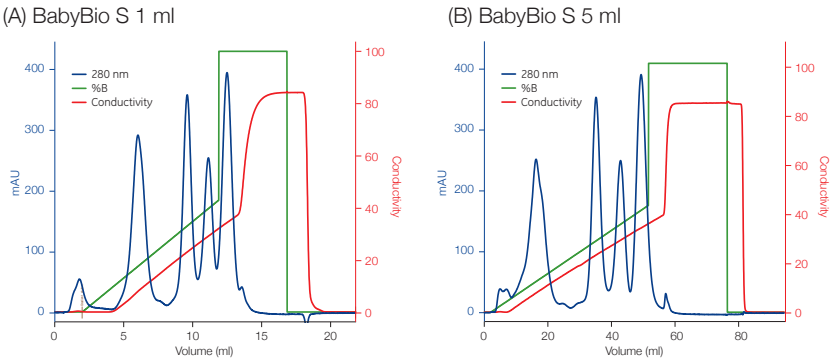

Figure 1.

Binding buffer: 20 mM MES, pH 6.0
Elution buffer: 1 M NaCl. 20 mM MES, pH 6.0
Sample: 1.3 mg/mL apo-transferrin, 2.7 mg/mL β-lactoglobulin, 2 mg/mL pepsin in binding buffer
Sample volume: 100 µl on the 1 ml columns, 500 µl on the 5 ml columns.
Flow: 1 ml/min (160 cm/h) in the 1 ml columns, and 3.5 ml/min (160 cm/h) in the 5 ml columns
Gradient: 0-80% B in 32 CV

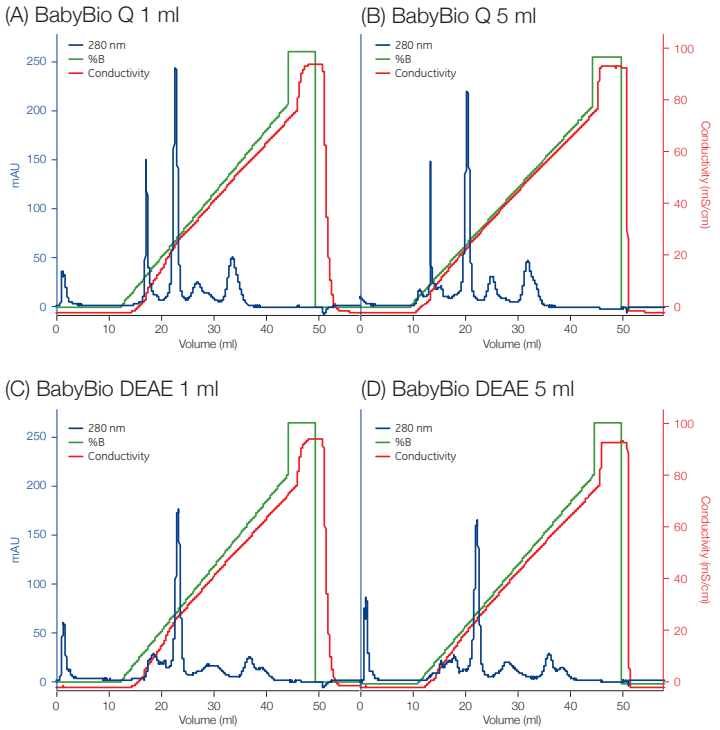

Figure 2.

Buffer pH and ionic strength

Buffer pH and ionic strength are important for the binding and elution of target substances and contaminants to column in ion exchange chromatography. Appropriate pH and ionic strength for buffers should be selected.

Short instructions

1. Connect the column to the chromatography system
2. Remove the storage solution using water or aqueous buffer
3. Select suitable pH and buffer
4. Equilibrate with binding buffer
5. Apply the sample
6. Wash with binding buffer
7. Second wash (optional) with increased ionic strength and/or modified pH
8. Elute with buffer with high ionic strength and/or changed pH

Cleaning in place

The general recommendation for cleaning the media in column is to use 1 M NaOH. For removal of hydrophobically bound substances a solution of non-ionic detergent, 70% ethanol or 30% isopropanol may be necessary.

Scale-up

Scale-up can conveniently be carried out from a 1 ml column to a 5 ml column. Columns can be coupled in series (note that back pressure will increase). Further scale-up can be done with bulk packages of WorkBeads ion exchange media packed in larger columns.

Equipment

BabyBio pre-packed ready to use columns can be used with most standard liquid chromatography equipment. Purification can also be done using a syringe connected to the column by a luer/std HPLC connector.

Column characteristics

BabyBio S	
Medium	WorkBeads 40 S
Matrix	Rigid, highly cross-linked agarose
Average particle size	45 µm
Ligand	Sulfonate
Ionic capacity	0.18–0.25 mmol/ml
Dynamic binding capacity[1]	130 mg BSA/ml medium
Column volumes	1 ml 5 ml
Column dimensions	7 × 28 mm (1 ml) 13 × 38 mm (5 ml)
Recommended flow rate BabyBio S 1 ml BabyBio S 5 ml	 1 ml/min 5 ml/min
Max flow rate BabyBio S 1 ml BabyBio S 5 ml	 5 ml/min 20 ml/min
Maximum back pressure	0.3 MPa, 3 bar, 43 psi
Chemical stability	Compatible with all standard aqueous buffers used for protein purification. 70% ethanol. Should not be stored at low pH for prolonged time.
pH Stability	3–13 working range 2–13 cleaning
Storage	+2°C to +25°C in 20% ethanol

[1] Dynamic binding capacity determined at 4 minutes residence time (0.25 ml/min in 1 ml column) in the presence of 20 mM Na-citrate, 60 mM NaCl, pH 3.5.

BabyBio Q	
Medium	WorkBeads 40 Q
Matrix	Rigid, highly cross-linked agarose
Average particle size, µm	45 µm
Ligand	Quarternary amine
Ionic capacity	0.18–0.25 mmol/mL
Dynamic binding capacity[2]	50 mg BSA/ml medium
Column volumes	1 ml 5 ml
Column dimensions	7 × 28 mm (1 ml) 13 × 38 mm (5 ml)
Recommended flow rate BabyBio Q 1 ml BabyBio Q 5 ml	 1 ml/min 5 ml/min
Max flow rate BabyBio Q 1 ml BabyBio Q 5 ml	 5 ml/min 20 ml/min
Maximum back pressure	0.3 MPa, 3 bar, 43 psi
Chemical stability	Compatible with all standard aqueous buffers used for protein purification. 70% ethanol. Should not be stored at low pH for prolonged time.
pH Stability	3–12 working range 2–13 cleaning
Storage	+2°C to +25°C in 20% ethanol

[2] Dynamic binding capacity determined at 4 minutes residence time (0.25 ml/min in 1 ml column) in 50 mM NaCl, 50 mM Tris-Cl, pH 8.0.

BabyBio DEAE	
Medium	WorkBeads 40 DEAE
Matrix	Rigid, highly cross-linked agarose
Average particle size	45 µm
Ligand	Diethylaminoethyl
Ionic capacity	0.11–0.16 mmol/mL
Dynamic binding capacity[3]	40 mg BSA/ml medium
Column volumes	1 ml 5 ml
Column dimensions	7 × 28 mm (1 ml) 13 × 38 mm (5 ml)
Recommended flow rate BabyBio DEAE 1 ml BabyBio DEAE 5 ml	 1 ml/min 5 ml/min
Max flow rate BabyBio DEAE 1 ml BabyBio DEAE 5 ml	 5 ml/min 20 ml/min
Maximum back pressure	0.3 MPa, 3 bar, 43 psi
Chemical stability	Compatible with all standard aqueous buffers used for protein purification. 70% ethanol. Should not be stored at low pH for prolonged time.
pH Stability	3–9 working range 2–13 cleaning
Storage	+2°C to +25°C in 20% ethanol

[3] Dynamic binding capacity determined at 4 minutes residence time (0.25 ml/min in 1 ml column) in 50 mM NaCl, 50 mM Tris-Cl, pH 8.0.

Ordering information

Product name	Pack size	Article number
BabyBio S 1 mL	1 × 1 mL	45 200 101
	2 × 1 mL	45 200 102
	5 × 1 mL	45 200 103
	10 × 1 mL	45 200 104
	100 × 1 mL	45 200 110
BabyBio S 5 mL	1 × 5 mL	45 200 105
	2 × 5 mL	45 200 106
	5 × 5 mL	45 200 107
	10 × 5 ml	45 200 108
	100 × 5 mL	45 200 109
BabyBio Q 1 mL	1 × 1 mL	45 100 101
	2 × 1 mL	45 100 102
	5 × 1 mL	45 100 103
	10 × 1 mL	45 100 104
	100 × 1 mL	45 100 110
BabyBio Q 5 mL	1 × 5 mL	45 100 105
	2 × 5 mL	45 100 106
	5 × 5 mL	45 100 107
	10 × 5 ml	45 100 108
	100 × 5 mL	45 100 109
BabyBio DEAE 1 mL	1 × 1 mL	45 150 101
	2 × 1 mL	45 150 102
	5 × 1 mL	45 150 103
	10 × 1 mL	45 150 104
	100 × 1 mL	45 150 110
BabyBio DEAE 5 mL	1 × 5 mL	45 150 105
	2 × 5 mL	45 150 106
	5 × 5 mL	45 150 107
	10 × 5 ml	45 150 108
	100 × 5 mL	45 150 109
HPLC plug column top	10 pcs	70 100 010
HPLC cap column bottom	10 pcs	70 100 020

To purchase Bio-Works products contact your local distributor. You may also contact Bio-Works directly at: **info@bio-works.net**

For more information about Bio-Works, please visit our website at: **www.bio-works.net.**

Bio-Works

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