# BabyBio columns with excellent resolution and high capacities

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## Introduction

The prepacked BabyBio™ columns for ion exchange chromatography (IEX) are designed for easy and convenient purification of protein, peptides and oligonucleotides. Giving excellent resolution and high capacity make them useful tools in research and process development.

We have used standard IEX methods and compared the resolution and dynamic binding capacity (DBC), on BabyBio columns for IEX towards HiTrap™ Capto™ SP ImpRes 1 ml and HiTrap Capto Q ImpRes 1 ml.

## Results

The resolution of BabyBio S 1 ml (cation exchanger) and BabyBio Q 1 ml (anion exchanger), compared to HiTrap Capto SP ImpRes 1 ml and HiTrap Capto Q ImpRes 1 ml is shown in Fig. 1 and Fig. 2. The results show significantly higher resolution for BabyBio S 1 ml and equal resolution for BabyBio Q 1 ml.

| | |
|---|---|
| *Sample:* | 0.25 ml 1.5 mg/ml concanavalin A, 0.5 mg/ml α-chymotrypsinogen A, 1.5 mg/ml ribonuclease A, 0.5 mg/ml lysozyme in binding buffer |
| *Binding buffer:* | 50 mM MES, pH 6.0 |
| *Elution buffer:* | 50 mM MES, 1 M NaCl, pH 6.0 |
| *Gradient:* | 0 - 50% in 20 column volumes (CV) |
| *Flow:* | 1 ml/min (150 cm/h) |

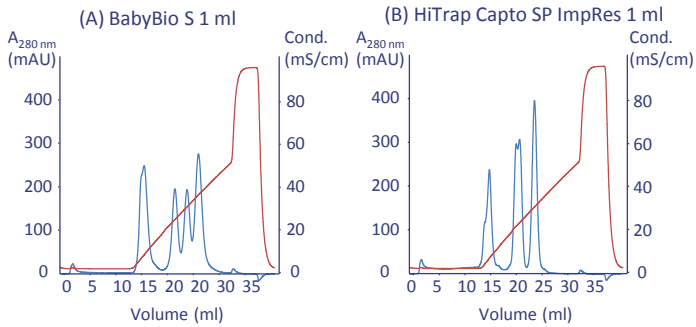


**Figure 1. Separation on BabyBio S 1 ml (A) and HiTrap Capto SP ImpRes 1 ml (B).**

| | |
|---|---|
| *Sample:* | 2 ml 0.3 mg/ml apo-transferrin, 0.2 mg/ml α-lactalbumin, 0.6 mg/ml soybean trypsin inhibitor in binding buffer |
| *Binding buffer:* | 50 mM Tris-HCl, pH 7.4 |
| *Elution buffer:* | 50 mM Tris-HCl, 1 M NaCl, pH 7.4 |
| *Gradient:* | 0 - 40% in 20 CV |
| *Flow:* | 1 ml/min (150 cm/h) |

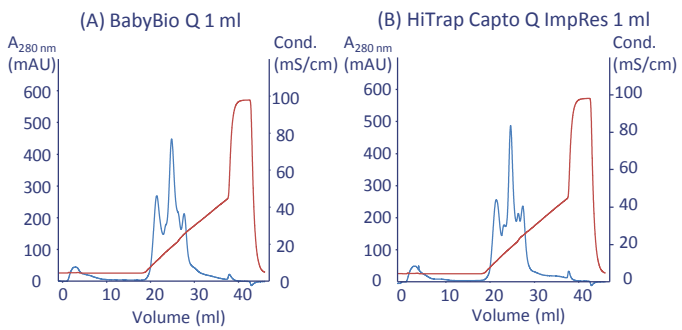


**Figure 2. Separation on BabyBio Q 1 ml (A) and HiTrap Capto Q ImpRes 1 ml (B).**

A five times scaling-up from BabyBio S 1 ml to BabyBio 5 ml is shown in Fig. 3. Results show even higher resolution while increasing the column volume by five.

| | |
|---|---|
| *Sample volume:* | (A) 0.25 ml, (B) 1.25 ml |
| *Sample:* | 1.5 mg/ml concanavalin A, 0.5 mg/ml α-chymotrypsinogen A, 1.5 mg/ml ribonuclease A, 0.5 mg/ml lysozyme in binding buffer |
| *Binding buffer:* | 50 mM MES, pH 6.0 |
| *Elution buffer:* | 50 mM MES, 1 M NaCl, pH 6.0 |
| *Gradient:* | 0 - 50% in 20 CV |
| *Flow:* | (A) 1 ml/min (150 cm/h)<br>(B) 3.5 ml/min (150 cm/h) |

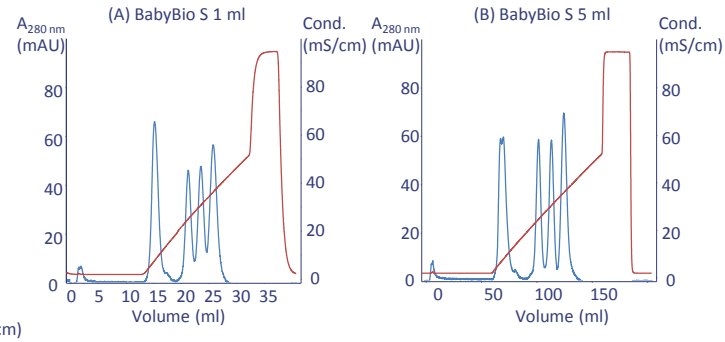


**Figure 3. Scale-up from a BabyBio S 1 ml column to a BabyBio S 5 ml column.**

DBC was determined using bovine serum albumin (BSA) for BabyBio S 1 ml, BabyBio Q 1 ml, HiTrap Capto SP ImpRes 1 ml and HiTrap Capto Q ImpRes 1 ml (Fig. 4). The results show 15% and 30% higher dynamic binding capacity, respectively, compared to competitor products.

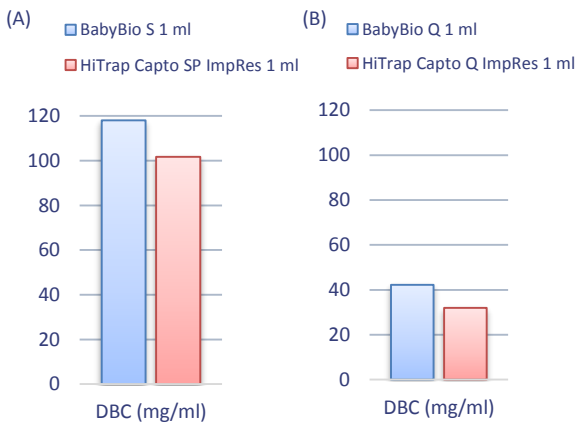


**Figure 4. DBC measured at 10% breakthrough ($QB_{10\%}$). (A) 2 mg BSA/ml in 20 mM Na-citrate, pH 4.0. Flow rate 1 ml/min (150 cm/h). (B) 1 mg BSA/ml in 50 mM Tris-HCl, 50 mM NaCl, pH 8.0. Flow rate 1 ml/min (150 cm/h).**

## Summary

BabyBio columns for IEX show excellent results during investigation of both resolution and dynamic binding capacity. BabyBio S 1 ml gives significantly higher resolution compared to HiTrap Capto SP ImpRes 1 ml. BabyBio Q 1 ml gives equal resolution as HiTrap Capto Q ImpRes 1 ml.

Finally, both BabyBio S 1 ml and BabyBio Q 1 ml have higher dynamic binding capacity in this comparison.



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