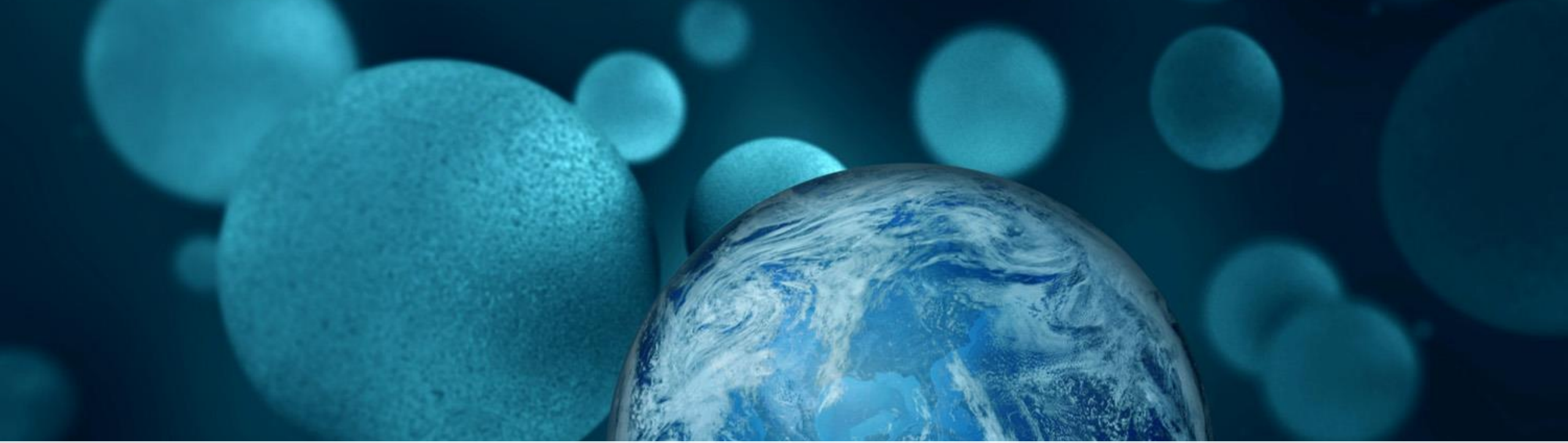


ThermoFisher SCIENTIFIC

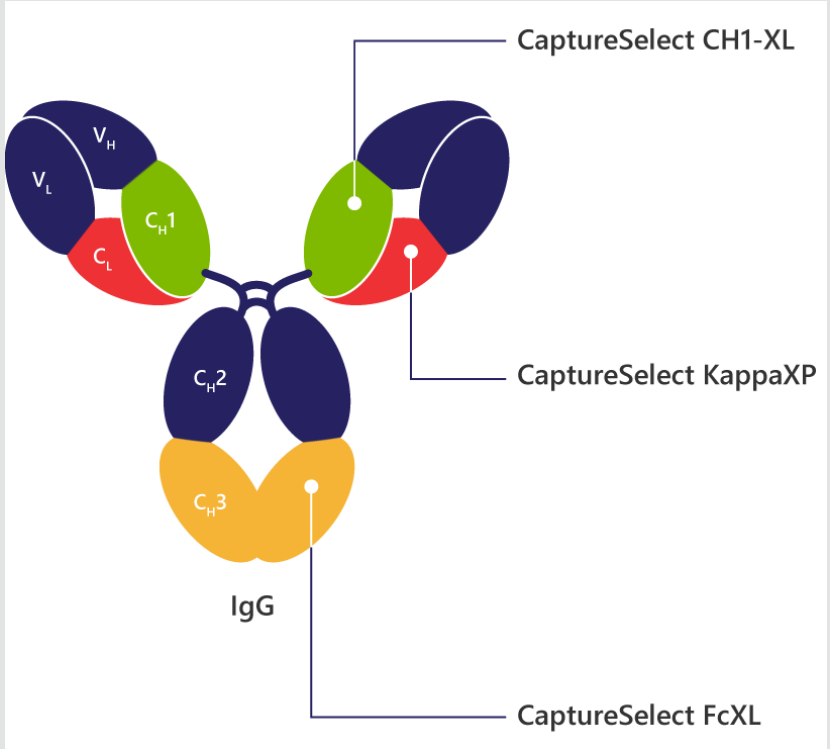
CaptureSelect™ KappaXP chromatography resin

CaptureSelect™ KappaXP resin

Next generation Kappa light chain binder

- Generic: 100% Kappa subtype coverage for all Ig's containing a Kappa light chain
- Human specific, no binding to bovine antibodies
- High binding capacity:
  - 20-30 g/l Kappa Fab
  - 30-45 g/l IgG
- Mild elution properties (up to pH 6)
- Good stability (75-100 mM NaOH)
- Excellent scalability
- Non-animal-derived

CaptureSelect antibody selectivity

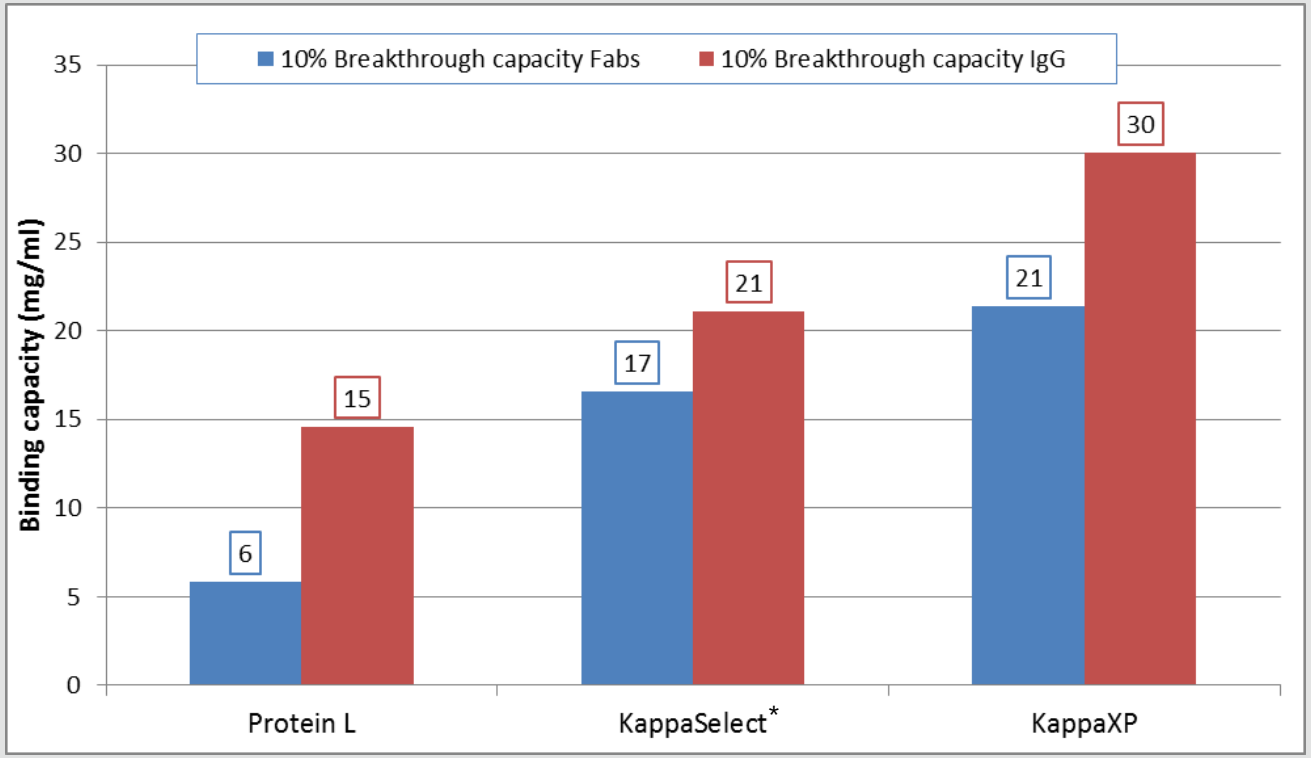


ThermoFisher SCIENTIFIC

CaptureSelect KappaXP binding capacity; comparison with competitive products

CaptureSelect KappaXP 10% breakthrough analysis

The CaptureSelect KappaXP resin shows the highest binding capacity at 10% breakthrough, compared to competitive products



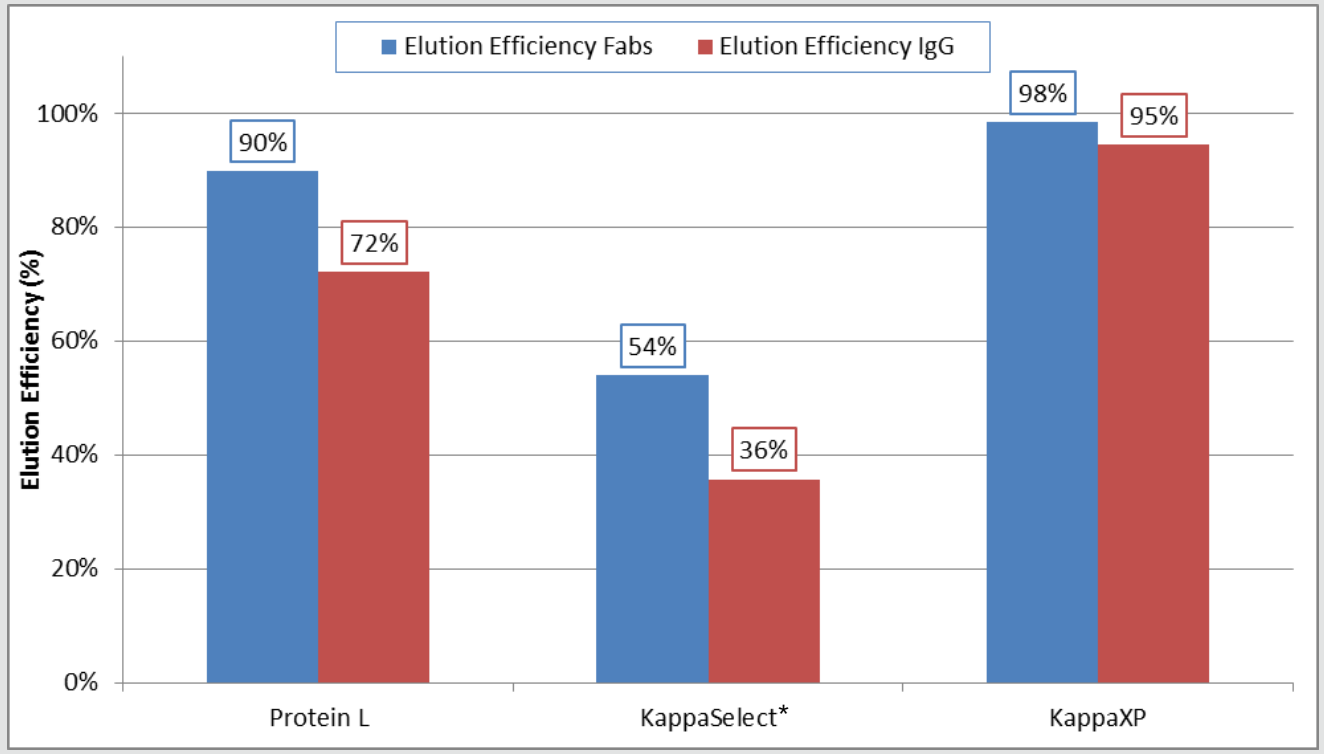
Capacities measured with Polyclonal IgG and Polyclonal Fab at 6,1 min residence time on 1 min columns.
Bound protein eluted using 20 mM Citric Acid pH 3.5.

- **Polyclonal human fabs loaded (62% Kappa, 38% Lambda)**
- **Polyclonal human IgG loaded (70% Kappa, 30% Lambda)**

* GE Healthcare

CaptureSelect KappaXP elution efficiency

The CaptureSelect KappaXP resin shows an outstanding elution efficiency compared to competitive products

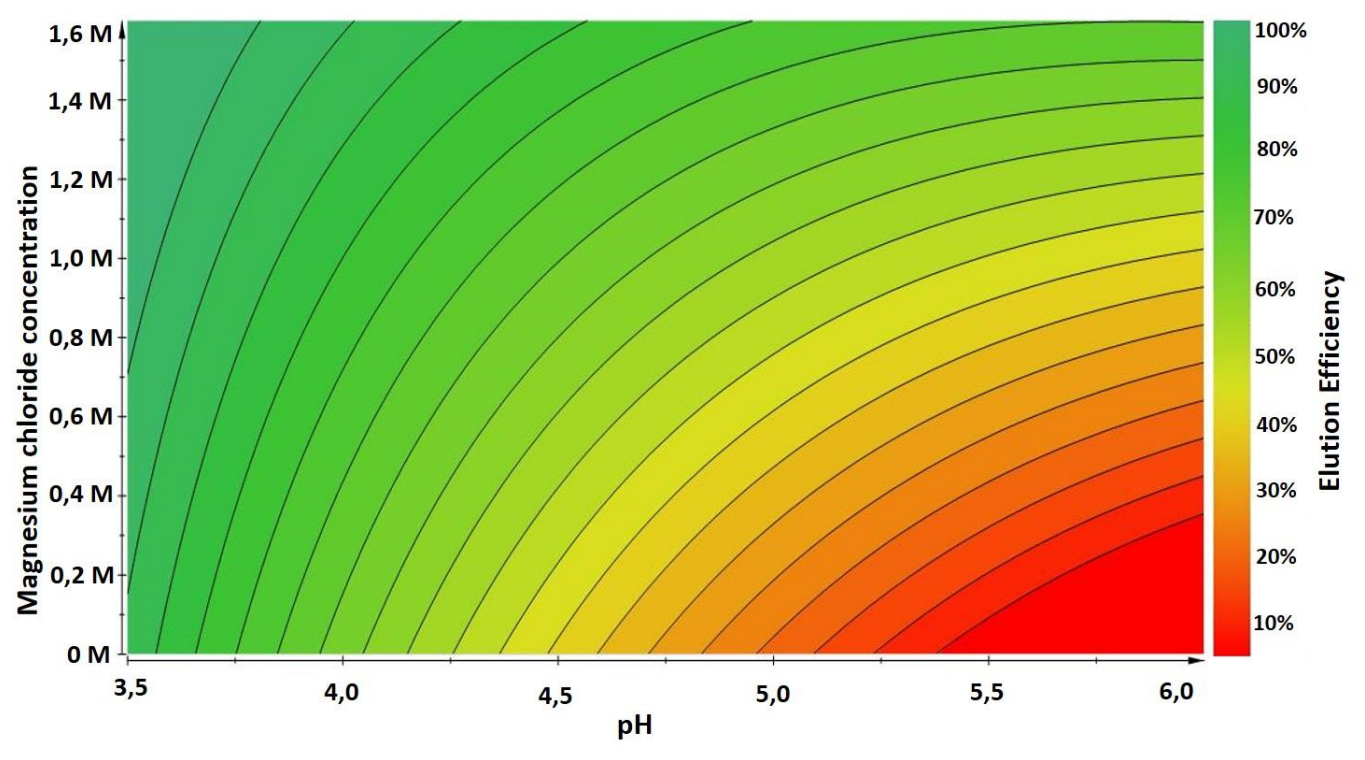


Elution efficiency determined using Polyclonal IgG and Polyclonal Fab on 1 ml columns.
Bound protein eluted using 20 mM Citric Acid pH 3.5, at 1.6 min residence time.

* GE Healthcare

CaptureSelect KappaXP elution efficiency

The CaptureSelect KappaXP resin demonstrates a large elution operating space (pH6) when adding co-solvents

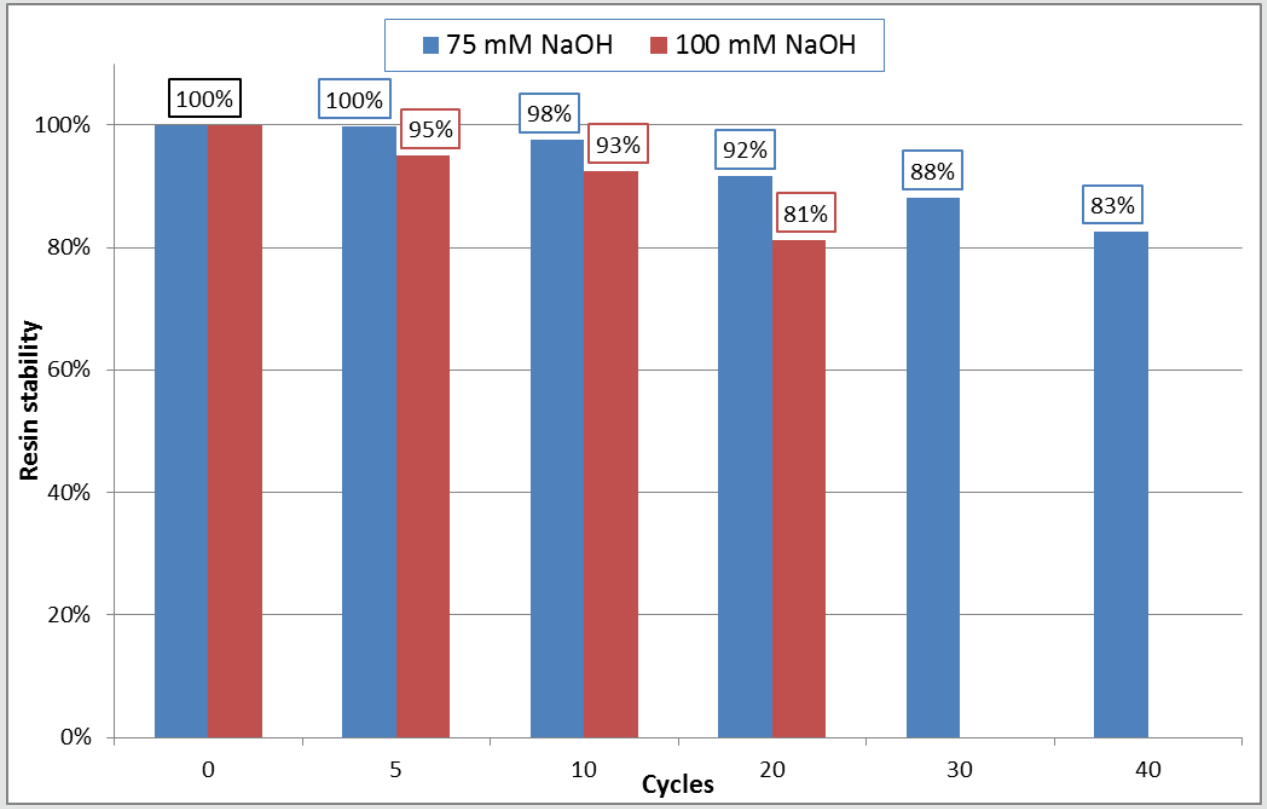


Elution efficiency determined using Polyclonal IgG on 200 µl columns.
IgG eluted at 0,8 min residence time, 20 column volumes.

>95% elution at pH 5-6 + 1.5 M $MgCl_2$

CaptureSelect KappaXP caustic stability

The CaptureSelect KappaXP resin shows good caustic stability*



KappaXP resin cycled with 75 mM and 100 mM NaOH

- 15 minutes NaOH exposure,
- 15 minute equilibration with PBS
- Resin capacity measured at different intervals

80% capacity left after:

- 20 cycles with100 mM NaOH
- 40 cycles with 75 mM NaOH

Capacities measured with Polyclonal IgG at 0,8 min residence time on 400 µl columns. Bound protein eluted using 20 mM Citric Acid pH 3.5.

* Resin lifetime depends on how the resin is used and cleaned.

CaptureSelect KappaXP advised cleaning strategy

Acidic strip after every run

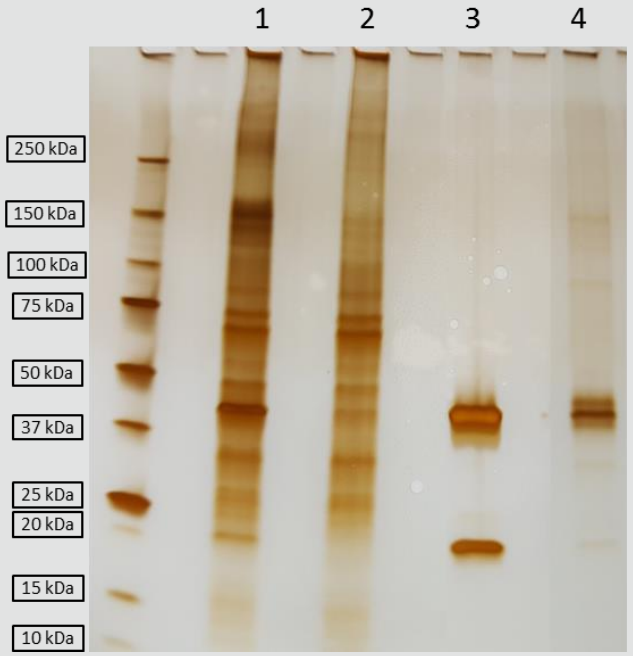
- 0.1-0.5 M Citric Acid pH 2 (has chelating properties)
- When preferred, other acids can be used

Additional cleaning/sanitization steps (when needed)

- Process optimization mainly depending on type of feed
    - Cleaning after every run, or after 2-5 runs with 50-100 mM NaOH
- Acidic cleaning with PAB (phosphoric acid, acetic acid, benzyl alcohol) as alternative for NaOH

Monoclonal Fab (Ranibizumab) and IgG (Rituximab) purification examples

Ranibizumab one-step purification

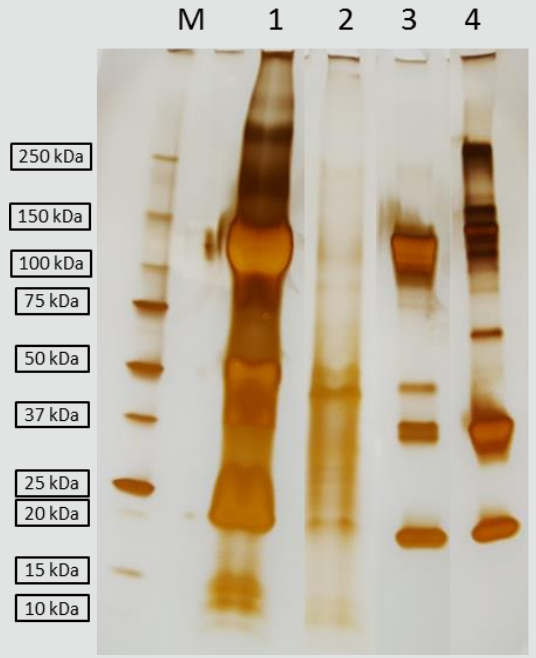


1. Ranibizumab feed (0,01 g/l)
2. Flowthrough
3. Elution pH 3.5 (10x diluted)
4. Strip pH 2.0 (Non-diluted)

Purification performed on 1 ml column with 0.5 minutes residence time. Protein was eluted using 20 mM Citric Acid pH 3.5.

- Intact Fab + light chain and light chain dimers present in the elution
- Capacity: 18 g/l

Rituximab one-step purification



1. Rituximab feed (3 g/l)
2. Flowthrough
3. Elution 10x diluted (pH 3.5)
4. Strip (pH 2) (Non-diluted)

Purification performed on 400 µl column with 2 minutes residence time. Protein was eluted using 20 mM Citric Acid pH 3.5.

- Intact IgG + light chain and light chain dimers present in the elution
- Capacity: 45 g/l

CaptureSelect KappaXP resin characteristics and available products

Purification of Ig's, Fab, and Fab2 fragments directly from complex source materials in a single step with high purity and yield.

MAIN RESIN CHARACTERISTICS

Matrix: agarose-based, epoxide activated
Average particle size: 65 ± 10 µm
Ligand: CaptureSelect™ KappaXP affinity ligand
Ligand immobilization method: Epoxide immobilization of the ligand
Fab Binding capacity: 20–30 g IgG Kappa-Fab / liter resin depending on flow rate, column height, and residence time
IgG Binding capacity: 35–45 g IgG / liter resin depending on flow rate, column height, and residence time
Elution conditions: 20 mM citric acid or acetic acid, pH 3–4; 100 mM Tris, 1.5 M $MgCl_2$ pH 6
Flow characteristics: 150–300 cm/h (up to 2 bar)
Formulation buffer: 20%(v/v) ethanol

*Products come with full regulatory support (RSF) enabling use in commercial manufacturing

SKU	Product
2943212005	CS KappaXP AFF MTR 5 ML
2943212010	CS KappaXP AFF MTR 10 ML
2943212050	CS KappaXP AFF MTR 50 ML
19432120250	CS KappaXP AFF MTR 250 ML
1943212001L	CS KappaXP AFF MTR 1 L*
1943212005L	CS KappaXP AFF MTR 5 L*
810321201-1	CS KappaXP Leakage Elisa -1 ASSAY
810321201-10	CS KappaXP Leakage Elisa -10 ASSAY
5943212005	CS KappaXP MiniChrom 5 ML
5943212200	CS KappaXP RoboColumn 200µl
494321205	CS KappaXP COLUMN 1X5 ml
494321201	CS KappaXP COLUMN 5X1 ml