

# LigaTrap® Human IgM Purification Column Product Instructions

## Introduction

LigaTrap® Technologies now offers our various lines of antibody affinity chromatography resins in a 1 and 5 mL prepacked column format for your research and process development needs. LigaTrap has developed a novel, patented, series of affinity ligands specific for the purification of monoclonal and polyclonal immunoglobulins from various species. LigaTrap® Prepacked Columns are capable of processing and purifying monoclonal antibodies from cell culture supernatant, ascites fluid, and other recombinant sources of IgM.



## Chromatographic Procedure Outline

All buffers can be prepared as shown in Table 1 below, or can be purchased as pre-qualified buffers from <https://www.ligatrap.com/purification-buffers/>

Part #	Name	Composition
BU-131-FP	LigaTrap® Sample Diluent 2.0	50mg/mL Adipic Acid, 4.0 M NaCl, pH 5.8
BU-132-FP	LigaTrap® Equilibration/Wash Buffer 2.0	10mg/mL Adipic Acid, 800mM NaCl, pH 5.8
BU-123-FP	LigaTrap® Elution Buffer	0.1M Sodium Acetate, pH 4.0
BU-124-FP	LigaTrap® Regeneration Buffer	0.1M Glycine, pH 2.5
BU-125-FP	LigaTrap® Neutralization Buffer	3.0M Tris-Base, pH 11.1
BU-126-FP	LigaTrap® Storage Buffer	10mM Sodium Phosphate, 0.15M NaCl, 0.05% Sodium Azide, pH 7.2

**Table 1:** LigaTrap Chromatographic Buffers and Composition

**Note:** Adipic Acid can be purchased from Sigma (A26357-500G)

**Note:** Adipic Acid is insoluble at low pH. It will solubilize as the pH increases to > 5.0. For example, after adding all components of LigaTrap Sample Diluent 2.0 Buffer, a 500ml batch will require ~60mL of 5N NaOH to begin dissolving the adipic acid. Continue to titrate with NaOH until a final pH of 5.8 is achieved. Then QS to the desired volume.

**Note:** For best results, titrate LigaTrap® Elution Buffer with Glacial Acetic Acid

**Note:** To limit precipitation of Tris-Base, store neutralization buffer at room temperature.

## Prepare Sample for Column Loading

- ❖ Add *LigaTrap® Sample Diluent 2.0* to the sample containing **human IgM** at a ratio of 1:4  
(Example: Add 2 mL *LigaTrap® Sample Diluent 2.0* to 8 mL of sample, or 200 mL to 800 mL of sample, etc...)
- ❖ Clarify sample via centrifugation to minimize risk of clogging column with particulate matter.
  - Recommended Speed: 10,000xg for 10-15 minutes.
  - It may be beneficial depending on sample matrix, to pass material through 0.22-0.45µm filter to remove remaining insoluble components.

## Connection of Column to Chromatography System

### Ensure not to exceed a maximum pressure of 0.2 MPa (2 Bar)

- ❖ To remove cap on outlet side of column, be sure to twist off cap. **DO NOT SNAP OFF**. Incorrect removal of cap can negatively impact column performance.
- ❖ Connect column to system using correct connectors. Make drop-to-drop connection with column using either *LigaTrap® Storage Buffer* or *LigaTrap® Equilibration/Wash Buffer 2.0*.
  - **Recommended flow rate for connection: 0.5-1.0 mL/minute**

Processing Step	Recommended Flow Rate (mL/minute)
Equilibration	1mL Column: 1.0-2.0 mL/minute 5mL Column: 3.0-5.0 mL/minute
Sample Load/Wash/Elution/Regeneration/Sanitization	1mL Column: 0.1-0.2 mL/minute 5mL Column: 0.5-1.0 mL/minute

Table 2. Recommended Flow Rates

## Removal of Storage Buffer and Column Equilibration

- ❖ After making connection to system, begin equilibrating with *LigaTrap® Equilibration/Wash Buffer 2.0*. Equilibrate the column with at least 10 CV (column volumes) to ensure complete removal of storage buffer.

## Application of Sample

- ❖ Load prepared sample (as described above) over column. For best results allow for residence time of 5-10 minutes to ensure maximum binding of **human IgM**.

## Wash

- ❖ Following loading of sample, wash the column with 10-15 CV of *LigaTrap® Equilibration/Wash Buffer 2.0*.

## Elute

- ❖ Elute bound antibody with 5-10 CV of *LigaTrap® Elution Buffer*. For higher concentration elute with 5 CV, but if higher yields are desired, use 10 CV.
  - Make sure to keep track of which elution scheme used for future buffer exchange and/or pH adjustment. Add *LigaTrap® Neutralization Buffer* at a volume equal to 12% v/v of total elution volume.

## Regeneration

- ❖ Regenerate column with 10 CV of *LigaTrap® Regeneration Buffer*.

## Re-Equilibration/Storage

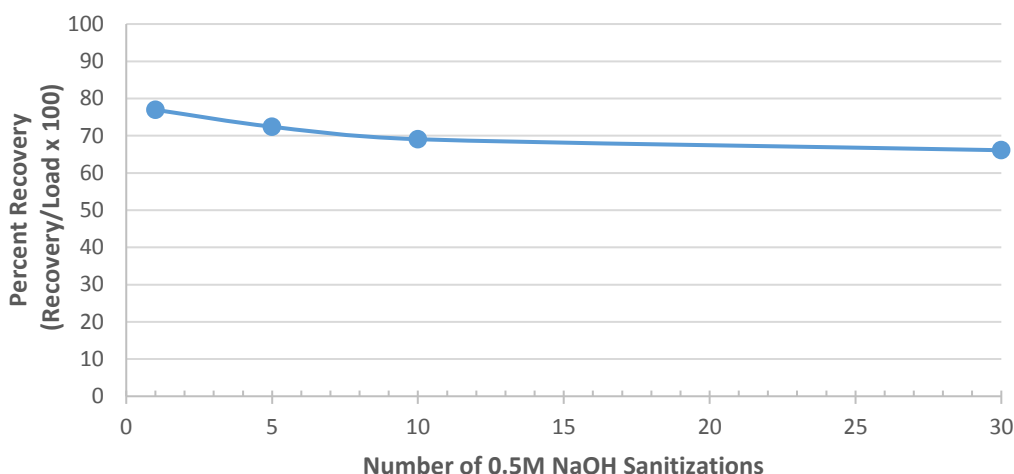
- ❖ If more runs are desired, re-equilibrate column with 10 CV of *LigaTrap® Equilibration/Wash Buffer 2.0*, to prepare column for next run.

- ❖ If column will not be used for an extended period of time, wash column with 10CV of *LigaTrap® Storage Buffer* to remove any residual processing buffers. Cap both ends and store at 2-8° C.

## Column Maintenance

After extended use, the column may non-specifically bind small amounts of impurities, leading to a loss in column performance. It is recommended that a 0.5M NaOH solution be used for sanitization of the column.

- ❖ Sanitize the column with 10CV of 0.5M NaOH. **A contact time of 20 minutes is recommended** for sufficient removal of any bound impurities.
  - **DO NOT** leave column in 0.5M NaOH for extended periods of time, as high pH and corrosive nature of NaOH could negatively impact column performance.
  - Use at least 10CV *LigaTrap® Storage Buffer*, to ensure the column is properly neutralized before running chromatographic protocol or storage.



**Figure 1:** LigaTrap® Prepacked Column alkaline stability. Load: 15 mg IgM/mL Resin. 0.5M NaOH contact time of 20 minutes per cycle.

## Product Specifications

Parameter	LigaTrap® Prepacked Column Specification
Ligand Binding Target	Human IgM
Ligand	LigaTrap® Human IgM Affinity Ligand
Binding Capacity	≥15 mg Human IgM /mL Resin
Column Volume	1 or 5 mL
Column Dimensions	7.4 x 25.3 mm (1 mL Column) 15.8 x 26.2 mm (5 mL Column)
Recommend Flow Rates	1 mL Column: 0.1 - 2.0 mL/minute 5mL Column: 1.0 - 5.0 mL/minute
Pressure Limit	0.2 MPa (2.0 Bar)
pH Stability	3-10 Extended Exposure 1-14 Sanitization
Temperature Stability	2 - 42° C Long Term Storage 2-8° C
Storage	2-8° C in 10mM Sodium Phosphate, 0.15M NaCl, 0.05% Sodium Azide, pH 7.2

## **Other LigaTrap® Products**

Target Species	Isotype	Part Number		
		Prepacked Columns	5mL Loose Resin	Purification Spin Column Kit
Human	IgG	LT-095-1x1ml LT-095-3x1ml LT-095-1x5ml	LT-095	LT-095KIT
	IgM	LT-143-1x1ml LT-143-3x1ml LT-143-1x5ml	LT-143	LT-143KIT
	IgA	LT-146-1x1ml LT-146-3x1ml LT-146-1x5ml	LT-146	LT-146KIT
Mouse	IgG	LT-137-1x1ml LT-137-3x1ml LT-137-1x5ml	LT-137	LT-137KIT
	IgM	LT-145-1x1ml LT-145-3x1ml LT-145-1x5ml	LT-145	LT-145KIT
Rat	IgG	LT-138-1x1ml LT-138-3x1ml LT-138-1x5ml	LT-138	LT-138KIT
	IgM	LT-147-1x1ml LT-147-3x1ml LT-147-1x5ml	LT-147	LT-147KIT
Sheep	IgG	LT-141-1x1ml LT-141-3x1ml LT-141-1x5ml	LT-141	LT-141KIT
Llama	IgG	LT-144-1x1ml LT-144-3x1ml LT-144-1x5ml	LT-144	LT-144KIT
Goat	IgG	LT-136-1x1ml LT-136-3x1ml LT-136-1x5ml	LT-136	LT-136KIT
Rabbit	IgG	LT-139-1x1ml LT-139-3x1ml LT-139-1x5ml	LT-139	LT-139KIT
Chicken	IgY	LT-142-1x1ml LT-142-3x1ml LT-142-1x5ml	LT-142	LT-142KIT

For further product information please visit our website at [LigaTrap.com](http://LigaTrap.com). For technical support and questions email us at [techsupport@ligatrap.com](mailto:techsupport@ligatrap.com)