BIOTECH SUPPORT GROUP

NuGel™ Poly-Aldehyde

Polymer Coated Silica Affinity Matrices

Special Features of NuGel™:

- Non-specific sites are virtually eliminated by a polymer coating
- Stable across a wide pH range 2 - 10
- 1000Å, 50µm Silica suitable for LC and batch processes

Special Features of Poly-Aldehyde ligand:

- Covalent immobilization of protein, independent of pI.
- Covalent immobilization of amino ligands.
- Covalent immobilization can be achieved at any pH between 4 to 9.
- Protein binding capacity: murine IgG(5-10mg per gram of support)
  sheep serum(5-10mg per gram of support)

Silica has been an industry standard as an advantageous matrix suitable for high performance liquid chromatography. With NuGel™, non-specific sites have been virtually eliminated making it an ideal support for affinity purification. Through a proprietary polymer coating, Silica is cross linked forming a reactive Poly-Epoxy functionality stable across a wide pH range (pH 2 to 10). From this foundational chemistry, all of the NuGel™ affinity products are derived.

For Immobilization of Proteins, Antibodies, Hormones, Peptides, Haptens, Drugs, Etc.						
Product Name	**Matrix Reactive Group**	**Ligand Reactive Group**	**Special Features**	**Size**	**Column Volume (Approx)**	**Item No.**
NuGel™ Poly-Epoxy	Terminal Epoxy	Amino	Direct Coupling of Amino Groups	25 Grams	50 ml	NPEY-25
NuGel™ Poly-Amine	Terminal Amine	Carboxylic Acid, or Carbohydrate	Carbodiiamide reaction, or $NaIO_4$ derived Aldehyde	25 Grams	50 ml	NPAM-25
NuGel™ Poly-Aldehyde	Terminal Aldehyde	Amino	Direct Coupling of Amino Groups	25 Grams	50 ml	NPAY-25
NuGel™ Poly-Hydroxy	Terminal Glycol	Amino	Carbodiimidazole mediated reaction	25 Grams	50 ml	NPHX-25
NuGel™ Poly-Carboxy	Terminal Carboxylic Acid	Amino	Carbodiiamide mediated reaction	25 Grams	50 ml	NPCY-25

* Kilogram quantities and other particle sizes and porosity of NuGel™ are also available upon request.

BIOTECH SUPPORT GROUP

NuGel™ Poly-Aldehyde Protocol

NuGel™ Poly-Aldehyde is a derivative of NuGel™ polyhydroxy affinity support. This affinity support contains aldehyde groups at the end of hydrophilic spacer arms and is used to covalently couple ligands containing amino groups.

Characteristics Of The Matrix	
Spacer Arm	Polymerized hydrophilic carbon chain
Porosity	1000Å
Average Particle Size	50um
Substitution Level	100-200 uEq/gm of aldehyde groups

Special Features:

- Covalent immobilization of protein, independent of pl.
- Covalent immobilization of amino ligands.
- Covalent immobilization can be achieved at any pH between 4 to 9.
- Protein binding capacity: murine IgG(5-10mg per gram of support)
  sheep serum(5-10mg per gram of support)

Poly-Aldehyde Protocol for Aqueous Coupling

1. Aldehyde derivatives readily react with ligands containing primary amines. For protein-ligands, optimal coupling takes place under high protein concentrations, 5-10 mg/ml, but good results can be achieved with 1-2 mg/ml. A suitable coupling buffer is 0.1 M Phosphate, pH 6.8 preferably with 0.1 M NaCl. The coupling time usually takes 8-24hours.
   Do not use Tris or Glycine buffers as they contain amines.

2. One gram of NuGel™ Poly-Aldehyde produces approximately 2 ml column (or bed) volume. Weigh out required amount and wash on a sintered glass funnel with DI water containing 0.1 M NaCl. Transfer to mixing or reaction vessel.

3. Transfer the protein-ligand solution (3-4ml) to the washed NuGel™ Poly-Aldehyde support. Mix by orbital shaker or overhead stirrer. Do not use magnetic stirrer. Mix at room temperature or at 4°C for 8-24hours.

4. Using a filter or column, wash the gel with cold coupling buffer. Block the excess active aldehyde groups by suspending in 10ml of 1M Ethanolamine or 1 M Glycine Methyl Ester, in coupling buffer, pH 7.5. Mix 8 hours at 2-8 °C. Wash the gel extensively with cold coupling buffer. Store at 4°C in a well-sealed container.

Operating Modes

Since the support matrix is based on a rigid 50 µm particle, NuGel™ can be operated in low pressure pump or gravity flow columns, or in batch mode.

BIOTECH SUPPORT GROUP

Related NuGel™ References

Patents

Monoclonal antibodies directed to the cytotoxic lymphocyte maturation factor European Patent EP0790255

Purification of immunoglobulins using affinity chromatography and peptide US 2006/0153834 A1

Affinity

Chaumet, Alexandre, Sandrine Castella, Laïla Gasmi, Aurélie Fradin, Gilles Clodic, Gérard Bolbach, Robert Poulhe, Philippe Denoulet, and Jean-Christophe Larcher. "Proteomic analysis of Interleukin enhancer binding factor 3 (Ilf3) and Nuclear Factor 90 (NF90) interactome." *Biochimie* (2013).

Dermot Walls, Robert McGrath and Sinéad T.Loughran A Digest of Protein Purification. *Methods Molecular Biology.* Volume 681: 3-23 (2011)

Ehrlich, G. K., Michel, H., Chokshi, H. P. and Malick, A. W. Affinity purification and characterization of an anti-PEG IgM. *Journal of Molecular Recognition*, 22: 99–103 (2009).

Development of hepatitis B virus capsids into a whole-chain protein antigen display platform: New particulate Lyme disease vaccines. *International Journal of Medical Microbiology* Volume 298, Issues 1-2, 3 January 2008, Pages 135-142

A sensitive and high-throughput assay to detect low-abundance proteins in serum Hongtao Zhang, Xin Cheng, Mark Richter & Mark I Greene. *Nature Medicine* 12, 473 - 477 (2006)

Transformation of a L-peptide epitope into a D-peptide analog. *Peptides Frontiers of Peptide Science American Peptide Symposia*, 2002, Volume 5, Session XI, 769-770

Expression and folding of an antibody fragment selected in vivo for high expression levels in Escherichia coli cytoplasm. *Research in Microbiology* Volume 153, Issue 7, September 2002, Pages 469-474

Identification of model peptides as affinity ligands for the purification of humanized monoclonal antibodies by means of phage display *Journal of Biochemical and Biophysical Methods* Volume 49, Issues 1-3.2001

George K. Ehrlich, Pascal Bailon, Wolfgang Berthold. Phage Display Technology - Identification of Peptides as Model Ligands for Affinity Chromatography *Affinity Chromatography Methods in Molecular Biology*, 2000, Volume 147, 209-220

BIOTECH SUPPORT GROUP

A Digest of Protein Purification and partial amino acid sequence of a 28 kDa cyclophilin-like component of the rat liver sigma receptor. *Life Sciences* , Volume 55, Issue 8, 1994.

Nachman, M., Azad, A. R. M. and Bailon, P. (1992), Efficient recovery of recombinant proteins using membrane-based immunoaffinity chromatography (MIC). *Biotechnology and Bioengineering*, 40: 564–571.

Kinetic aspects of membrane-based immunoaffinity chromatography. Journal of Chromatography A Volume 597, Issues 1-2, 24 April 1992, Pages 167-172

Identification of model peptides as affinity ligands for the purification of humanized monoclonal antibodies by means of phage display. Methods in Molecular Biology, 2000, Volume 147, 209-220

Membrane-based receptor affinity chromatography. Journal of Chromatography A Volume 597, Issues 1-2, 24 April 1992, Pages 155-166 9th International Symposium on Affinity Chromatography and Biological Recognition

Ion Exchange

Levin W Protein Purification of recombinant human secretory phospholipase A2 (group II) produced in long-term immobilized cell culture. *Expr Purif* 1992 Feb;3(1):27-35.

Contact Us

We welcome your questions and comments regarding our products.

Address 1 Deer Park Drive Suite M Monmouth JCT, NJ 08852,USA
Call 732-274-2866, 800-935-0628 Monday – Friday 9am-6pm EST.
Fax 732-274-2899
Email sales@biotechsupportgroup.com