

**BIO**TECH 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	Carbodiimide 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	Carbodiimide mediated reaction	25 Grams	50 ml	NPCY-25

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



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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 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)

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.



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Related NuGel™ References

Patents

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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

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