LT BIOTECH LTD.
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Helios 30Q

1. Basic product information

Helios 30Q is an ion-exchange resin based on highly cross-linked porous polystyrene-divinylbenzene (PS/DVB) monodisperse microspheres, with a chemically bonded, highly stable hydrophilic layer. Helios 30Q has the characteristics of high flow rate, high resolution, high capacity, high rigidity, good biocompatibility, and physical and chemical stability. Compared with traditional chromatography resin, it significantly improves the production efficiency and sample recovery rate of the downstream purification process, and is widely used in the capture, intermediate purification and fine purification of biomolecules such as antibodies, proteins, peptides and nucleic acids.

2. Chromatography resin parameters

Resin type	Strong anion exchange
Matrix	Polystyrene-divinylbenzene
Median particle size	30 μm
Functional group	Quaternary amino group
Dynamic binding capacity	≥45 mg BSA/ml
Recommended flow rate	300–1000 cm/h
Maximum flow rate	2000 cm/h
Maximum working pressure	40 bar

3. Chemical resistance

pH stability*	2~12 (working range), 1~14 (CIP)
Chemical stability	Stable in common aqueous buffers: 1M NaOH+, 1M HCl, 50% acetic acid, 70% ethanol, 8M urea, 6M GdnHCl, 30% isopropanol, 0.5% Tween
Temperature resistance	Do not freeze! It can tolerate 121°C high-pressure sterilisation

** The physical and chemical properties and functions of the chromatographic resin have no obvious change after being placed in an environment of 40°C and pH 2–12 for 7 days.*

4. Method of use

- Buffer selection: buffer salts whose buffer groups do not act on the resin should be selected. The buffer solution with low salt (less than 5 mS/cm) and high pH (usually 1 pH unit higher than the isoelectric point of the target) should be adopted to facilitate the combination of substances. Meanwhile, the stability of samples in the buffer solution should be considered. Elution buffers are usually made by adding a high concentration of salt (e.g. 1M NaCl) or a low pH buffer to equilibration buffer.
- Flow rate: according the column bed height, use the flow rate 300~600 cm/h; the higher column bed height, the lower the flow rate.
- Sample preparation: to prevent blocking of the column, the sample needs to be filtered by a microporous membrane of 0.45μm before loading. The pH and conductivity of the sample are adjusted to be consistent with the equilibration

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buffer (the pH and conductivity of the sample can be adjusted by dilution, ultrafiltration and desalination with Persedex G-25).

- Equilibration: wash the column with equilibration buffer until the pH and conductivity of the column outlet buffer are basically the same as the equilibration buffer, which usually needs 3–5 column bed volumes (CV).
- Sampling: the loading volume is determined according to the mass of the sample and the binding load of Helios 30Q.
- Rinse: wash the column with equilibration buffer until the UV absorption value is reduced to an appropriate value.
- Elution: a linear gradient or step gradient can be used to increase the elution intensity in the eluent (usually a salt gradient of 0.5–1.0M NaCl is used), and substances with different binding strength can be eluted from the chromatographic column to collect different components and detect the location of the object. As a rule of thumb, a smaller gradient should be used in the elution zone of the target molecule and a steep gradient is preferred in the area for cleaning contaminants and impurities.
- In large-scale production processes, step gradients are often preferred because they are technically simpler and more reproducible than linear gradients; they also reduce buffer consumption, shorten process time and enable the eluting of the target molecule in a high concentration.
- Regeneration: flush the column with a high concentration of salt (e.g. 2M NaCl).
- Rebalancing: after rinsing with equilibration buffer, the second sample can be loaded and repeated.

5. Cleaning and sterilisation

Contaminants (e.g. lipids, endotoxins and proteins) accumulate on the column as the number of uses of the chromatography resin increases. Determine the frequency of CIP according to the degree of contamination of the chromatography resin (if the contamination is considerable, CIP is recommended after each use to ensure repeatability of results and to prolong the working life of the chromatography resin). For different types of impurities and contaminants, the recommended cleaning conditions are as follows:

• Removal of strongly binding proteins: wash with 5 CV of 2M NaCl solution, or use a high salt buffer not lower than pH 2, such as 1M NaAc solution.

• Removal of strongly hydrophobic proteins and precipitated proteins: first wash with 5 CV of 1M NaOH solution, then wash the lye with 5–10 CV of ultra pure or pure water.

• Removal of lipoproteins and lipids: first wash with 5 CV of 70% ethanol or 30% isopropanol, then rinse with 5–10 CV of ultra pure or pure water.

Note: 70% ethanol or 30% isopropanol should be degassed before use; the flow rate should be 30–60 cm/h during CIP. Reverse cleaning should be used when the clogging is severe.

To reduce the microbial load, it is recommended that 0.5~1M NaOH solution is used to treat the chromatographic resin. Treatment time is 15~30 minutes. It can also be autoclaved at 121°C (pH7) for 20 minutes.

6. Storage

Keep the unopened chromatography resin in the original container and store at 4~30°C in a well-ventilated, dry and clean place. Do not freeze. Wash the used column with 2–3 CV of 20% ethanol solution and store at 2~8°C.

7. Destruction and recycling

Since chromatography resin is difficult to degrade in nature, it is recommended that the waste chromatography resin is incinerated to protect the environment. For chromatography resin that has been in contact with

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biologically active samples such as viruses and blood, follow the local biosafety requirements before destroying or disposing of it.

8. Packing method

Detailed information on resin packaging is available on request. Please contact your local distributor.

9. Ordering information

Product name: Helios 30Q

Product Cat. No	Package
113-00025	25 ml
113-00100	100 ml
113-00500	500 ml
113-01000	1 L
113-05000	5 L
113-10000	10 L
113-20000	20 L