Data sheet

Heparin Resin

Heparin resin is an affinity chromatography medium that is used for affinity purification of biomolecules that show affinity to heparin.

The base matrix is made of cross-linked porous agarose. The particles have an open pore structure with good mass transfer properties to large protein molecules. Heparin is immobilized to the base matrix by a reducing amination method.

The medium shows high mechanical rigidity, so it can be operated at high flow velocities with moderate pressure drops. The medium is compatible with most of the chemical reagents commonly used in biological systems.

Table 1: Characteristics of Heparin Resin:

Matrix	Agarose
Functional group	Heparin of porcine origin
Ligand density	4 - 5 mg/ml
Particle size	50 - 150 μm
pH stability	4-13 (short term) and 4-12 (long term)
Working temperature	+4^{O}C to +30^{O}C
Chemical stability	Compatible with commonly used buffers, 6M guanidine-HCl, 8 M urea
Storage	0.05 M sodium acetate in 20% denatured ethanol

Method optimization

We recommend scouting for optimal binding / elution pH and for optimal ionic strength. Typically, Heparin resin binds proteins at neutral pH and moderate salt conditions (e.g. 0.1 to 0.3 M salt). The elution is achieved by increased salt concentration. We recommend paying special attention to optimising elution conditions to achieve improved purity in the elution step.

In general, balancing product recovery against process throughput is the major consideration when optimizing a method.

Regeneration
After each run, elute any reversibly bound material either with sodium hydroxide or reduced pH.

Cleaning-in-place (CIP)
CIP is a procedure that removes strongly bound materials such as lipids, endotoxins and denatured proteins that remain in the column after regeneration. Regular CIP prevents the build up of contaminants in the packed bed and helps to maintain the column performance.

A specific CIP protocol should be developed for each process according to the type of contaminants present. The frequency of CIP depends on the nature of individual applications.

The following information works as a general guide.

Salt with concentration up to 2 M can be used to clean the impurities bound by ionic interactions.

The contaminants bound hydrophobically can be removed by using the following reagents: 0.1 M NaOH, low percentage non-ionic detergents (e.g. 0.1 – 2%), 30% isopropanol in basic or acidic conditions (e.g. in the presence of acetic acid or phosphoric acid). A combination of the above reagents can be explored as well. In general, the incubation time should be longer (e.g. from 30 minutes to 2 hours) to ensure full dissociation of the contaminants. Long contact time should be avoided when alcohols are used, as the acrylic column body may be damaged.

Sanitization
Sanitization using 0.1 -0.5 M NaOH with a contact time of 1 hour is recommended.

Storage

The resin should be stored in 0.05 M sodium acetate containing 20% ethanol to prevent microbial growth. Store the resin at a temperature of +4°C to +30°C. After storage, equilibrate the resin with at least 5-bed volumes of binding buffer before use.

Ordering information

Product	Quantity	Code no.
Heparin SepFast	25 ml	160101
	100 ml	160102
	1 litre	160103
	5 litre	160104

BioToolomics Limited
Unit 30A
Number One Industrial Estate
Consett
County Durham DH8 6TJ
United Kingdom

www.biotoolomics.com