ProductInformation

L-ARGININE - AGAROSE
Sigma products A1018 and A8405

CAS NO.: N/A

PHYSICAL DESCRIPTIONS:[1]

A1018 is prepared from a 4% beaded agarose that was activated using cyanogen bromide (a 1-atom spacer); arginine is attached to the resin through the amino group. Each milliliter of gel contains 5 to 10 µmole ligand. The preswollen resin is packaged as a suspension in 2.0 M NaCl containing 0.02% thimerosal as a preservative.

A8405 is prepared from a cross-linked 4% beaded agarose that was epoxy-activated (a 12-atom spacer); arginine is attached to the resin through an amino group. Each milliliter of gel contains at least 5 µmole ligand. Lactose was added to this product to protect the agarose beads during lyophilization.

STORAGE / STABILITY AS SUPPLIED:

A1018 is stable for at least a year stored at 2-8°C; freezing may destroy the bead structure of the agarose, adversely affecting flow rate in columns.

A8504 should be stable at -20°C at least two years, kept dry to prevent the lactose from absorbing moisture.

PREPARATION FOR USE:

Any affinity resin must be well equilibrated with an appropriate buffer solution before use, both for pH and ionic strength. A1018 must be washed with several aliquots of buffer to remove the NaCl and preservative. A8405 must be swollen in water or low-ionic strength buffer, using about 50 mL per gram solid. Once swollen, the beads should be washed with several 50 mL aliquots of water or buffer to remove the lactose, then washed with equilibration buffer. For either product, the beads may be washed in a sintered glass filter funnel (with liquid removed with *gentle* suction) or in a beaker (with liquid carefully decanted).

REGENERATION FOR RE-USE/STORAGE:

Generally, affinity resins can be regenerated by washing with several changes of pH such as the suggestions below.[1] Asparagine-agarose has been regenerated for re-use using 0.1 M NaCl in 50 mM Tris-HCl at pH 8.5. However, the authors reported that this did not completely elute all bound protein, resulting in a gradual decrease in the binding capacity for fibronectin.[2]
GENERAL WASHING -
5-10 column volumes of 0.1 M borate buffer, pH 9, containing 1.0 M NaCl
5 column volumes of 1.0 M NaCl
5-10 column volumes of 0.1 M sodium acetate buffer, pH 4, containing 1.0 M NaCl

For re-use, the resin should be washed with 5-10 column volumes of buffer.

For storage, the resin should be placed in 2.0 M NaCl with a suitable bacteriostat, then stored at 2-8°C. If desired, it can be mixed with an equal volume of 40% lactose solution and re-lyophilized for storage at <0°C.

USAGE:

This resin was used in conjunction with gelatin-agarose in the purification of fibronectin. The equilibration and binding buffer was 50 mM Tris-HCl, pH 7.5. Fibronectin was eluted with the same buffer containing 0.1 M NaCl; further increase of the ionic strength did not affect per cent recovery of protein.[2]

Arginine-agarose has also been used to fractionate transfer ribonucleic acid, using 20 mM Tris-HCl, pH 7.5, containing 10 mM $MgCl_2$. Elution was effected by the use of the same buffer containing 0.25 M NaCl. The authors noted that the properties of arginine-agarose were generally very similar to those of DEAE-Sephadex.[3]

CITED REFERENCES:

1. Sigma production and quality control.
2. Vuento, M. and Vaheri, A.*, Biochem. J.*, 183, 331-337 (1979).
3. Jay, F.Y., Coultas, C. and Jones, D.S., *Nucleic Acids Res.*, 3,177-190 (1976).

ADDITIONAL REFERENCES:

Methods In Enzymology, 34, 732 (1974).
J. Chromatography, 51, 479 (1970).
Thrombosis Research, 41, 68 (1986).