3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Poly-L-lysine Hydrobromide

Product Numbers **P8954, P0879, P6516, P7890, P2636, P1274, P1399 and P1524**
Storage Temperature –20 °C

CAS: 25988-63-0

Product Description

Product Number	Molecular Weight
P8954	500–2,000
P0879	1,000–4,000
P6516	4,000–15,000
P7890	15,000–30,000
P2636	30,000–70,000
P1274	70,000–150,000
P1399	150,000–300,000
P1524	>300,000

Poly-L-lysine is a positively charged amino acid polymer. There is approximately one HBr per lysine residue. The HBr allows the poly-L-lysine to be a crystalline solid and soluble in water. To remove the HBr, solubilize it in a neutral buffer and dialyze to remove the salts.

None of the poly-L-lysine products are exposed to trifluoroacetic acid (TFA). They are dialyzed to remove monomer, dimer, trimer, (i.e. short chains) and then analyzed by thin layer chromatography (TLC) to determine the effectiveness of this process.

Purification of high or low molecular weight poly-L-lysines by size exclusion chromatography is not very effective. Some success has been achieved using succinylated derivatives. A more traditional method for fractionating polymers, such as dialysis with membranes of suitable molecular weight cut-off, is suggested.

A method for molecular weight determination by viscosity has been published.[1] In order to determine the molecular weight by SEC-LALLS, it is necessary to succinylate the poly-L-lysine. If this is not done, the product will form aggregates.

Applications for poly-L-lysine include the promotion of cell adhesion to solid substrates,[2-4] conjugation to methotrexate for increased drug transport,[5] microencapsulation of islets,[6] cell microencapsulation technology,[7] microarray glass slide coating,[8] and chromosomal preparations.[9]

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Sigma routinely tests the solubility of the poly-L-lysines at 50 mg per ml yielding a clear faint yellow solution. Sterile solutions can be stored at 2-8 °C for up to 2 years.

Storage/Stability

Store desiccated at –20 °C.

Procedure

Poly-L-lysine is a nonspecific attachment factor for cells useful in promoting cell adhesion to solid substrates. Poly-L-lysine enhances electrostatic interaction between negatively charged ions of the cell membrane and the culture surface. When adsorbed to the culture surface, poly-L-lysine increases the number of positively charged sites available for cell binding.

Polymers of both D- and L-lysine are used to coat slides. However, certain cells can digest poly-L-lysine; in this situation, poly-D-lysine should be used as the attachment factor so that the cells are not disrupted by excessive uptake of L-lysine.

The lower molecular weight poly-L-lysine (30,000–70,000) is easier to use because it is less viscous in solution, but the higher molecular weight poly-lysine (>300,000) provides more attachment sites per molecule. The molecular weight poly-L-lysine often preferred by users is the 70,000–150,000.

Cell Culture:
In using poly-L-lysine as an attachment factor optimal conditions must be determined for each cell line and application. In general, the following steps can be used.

1. Add 50 ml of sterile tissue culture grade water to 5 mg of poly-lysine.
2. Aseptically coat culture surface with 1 ml per 25 cm^2 of solution. Rock gently to ensure even coating of the culture surface.
3. After 5 minutes, remove solution by aspiration and thoroughly rinse surface with sterile tissue culture grade water.
4. Allow to dry at least two hours before introducing cells and medium.

If glassware or slides must be sterilized after coating with poly-lysine, γ-irradiation is recommended instead of autoclaving.

Histology:
In general, a 0.1% (w/v) poly-L-lysine solution is recommended as a dip for histology slide preparation. After a five-minute exposure, dry at room temperature or in a gentle oven. Store the solution in plastic bottles in the refrigerator and limit use to four times.

Related Products

Cell Culture Tested Poly-L-lysines

- Poly-L-lysine Hydrobromide, Lyophilized, Sterilized by γ-irradiation, MW 30,000–70,000, Prod. No. P9155
- Poly-L-lysine Hydrobromide, Lyophilized, Sterilized by γ-irradiation, MW 70,000–150,000, Prod. No. P6282
- Poly-L-lysine Hydrobromide, Lyophilized, Sterilized by γ-irradiation, MW >300,000, Prod. No. P5899
- Poly-L-lysine, 0.01% Solution, Sterile, MW 70,000–150,000, Prod. No. P4707
- Poly-L-lysine, 0.01% Solution, Sterile, MW 150,000–300,000, Prod. No. P4832

Cell Cultured Tested Poly-D-lysines

- Poly-D-lysine Hydrobromide, Lyophilized, Sterilized by γ-irradiation, MW 30,000–70,000, Prod. No. P7280
- Poly-D-lysine Hydrobromide, Lyophilized, Sterilized by γ-irradiation, MW 70,000–150,000, Prod. No. P6407
- Poly-D-lysine Hydrobromide, Lyophilized, Sterilized by γ-irradiation, MW >300,000, Prod. No. P7405

Poly-L-lysine Solution (suitable for histochemical techniques)

- Poly-L-lysine Solution, 0.1% (w/v) in water (preservative added), Prod. No. P8920

References

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