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ProductInformation

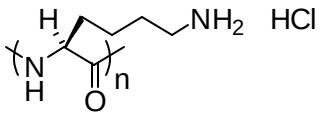
Poly-L-lysine hydrochloride

Product Numbers **P2658, P9404**
Storage Temperature –20 ° C

CAS# 26124-78-7
Synonym: PLL

Product Description

Product Number	Molecular Weight
P2658	15,000–30,000
P9404	>30,000



Poly-L-lysine is a positively charged amino acid polymer. There is approximately one HCl per lysine residue. A method for molecular weight determination by viscosity has been published.[1]

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 in water. Solutions can be stored at 2–8 °C for a few days and frozen at –20 °C for at least 2 months.

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.[2-5] 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 solid surfaces. Poly-L-lysine has been reported to improve the protein coating of ELISA plates.[6,7] However, in culture applications, 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 molecular weight of poly-L-lysine or poly-D-lysine often preferred by users is 70,000–150,000 (available in hydrobromide salt form; see related products).

Cell Culture:
When using poly-L-lysine as an attachment factor, the 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-L-lysine.
2. Aseptically coat culture surface with 0.5–1.0 ml of solution per 25 cm^2. 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.

If uneven coating occurs, glass slides may be pretreated with 1 mM magnesium acetate for 2–3 hours and then rinsed well before coating. Alternatively, they may be acid washed (hydrochloric acid or sulfuric acid). This treatment should allow for an even coating with the poly-L-lysine solution.

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, drain slides and dry at room temperature overnight or in an oven (~60 °C) for ~1 hour. 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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3. Leifer, D., *et al.*, Monoclonal antibody to Thy-1 enhances regeneration of processes by rat retinal ganglion cells in culture. *Science*, **224**, 303 (1984).
4. Cannela, M., and Ross, R. Influence of substratum on the retrograde response of the rat superior cervical ganglion *in vitro*. *Exp. Neurology*, **95**, 652 (1987).
5. Needham, L., *et al.*, Endothelial functional responses and increased vascular permeability induced by polycations. *Lab. Invest.* **59(4)**, 538-548 (1988).
6. Banerjee, D.S., *et al.*, An ELISA method for quantitation of tubulin using poly-l-lysine coated microtiter plates. *Indian J. Exp. Bio.*, **27**, 972-976 (1989).
7. Stinitz, M. Quantitation of the blocking effect of Tween 20 and bovine serum albumin in ELISA microwells. *Anal. Biochem.*, **282**, 232-238 (2000).

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