

## PRODUCT DATA SHEET

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### Polyinosinic-polycytidylic acid [Poly(I:C)] Endotoxin-free (sterile)

**Cat. No.:** IAX-200-021

**Lot. No.:**

<b>Name</b>	Polyinosinic-polycytidylic acid, potassium salt (Poly(I:C))
<b>MW</b>	High molecular weight (>1.5kb)
<b>CAS Number</b>	31852-29-6
<b>Purity</b>	≥99%
<b>Endotoxin-free</b>	Bacterial Endotoxin Test (kinetic turbidimetric LAL method) according to Ph. Eur. 9. Passed according to specification: Endotoxin-free: <0.002 EU/μg.
<b>Sterility</b>	Filter method: according to Ph. Eur. 9. Passed according to specification: • No growth in Thioglycolate medium at 30-35°C after 14 days. • No growth in Soybean Casein Digest Broth (TSB) at 20-25°C after 14 days.
<b>Solubility</b>	Soluble in water
<b>Handling</b>	Keep sterile. For a 1mg/ml stock solution, dissolve the total vial content in 2ml for 2mg size (5ml for the 5mg size) in endotoxin-free and sterile ddWater (Cat. No.: IAX-900-002), 0.9% NaCl Solution (Cat. No.: IAX-900-003) or PBS (Cat. No.: IAX-900-001) and mix well. The following procedure is recommended: Add 50% of the solvent and let dissolve for 10 mins. Add remaining 50% of the solvent and mix thoroughly. Moderate warming may aid dissolving.
<b>Activity</b>	Activates TLR3, MDA5/Helicard and RIG-I. Optimal working concentration depends upon target receptor accessibility, number, density, as well as cell type, activation read-out and therefore needs to be determined for each application. Recommended concentration range: in vitro: 0.5-10μg/ml, in vivo: 5mg/kg.
<b>Shipping</b>	Ambient
<b>Storage</b>	After reconstitution in sterile and endotoxin-free ddWater, store aliquots at 2-8°C for up to 6 months. For long-term storage in ddWater store aliquots between -15°C and -25°C (shelf-life: 12 months). Avoid freeze/thaw cycles. Thaw frozen Poly (I:C) at 60-70°C for 30 mins, thawed aliquots are stable for one day at room temperature and at least 2 weeks when stored at 2-8°C. Do not freeze again.
<b>Stability</b>	After reconstitution in PBS or 0.9% NaCl, store aliquots at 2-8°C for up to 1 week. For long-term storage in PBS or 0.9% NaCl store aliquots between -15°C and -25°C (shelf-life: 12 months). Avoid freeze/thaw cycles. Thaw frozen Poly (I:C) in PBS or 0.9% NaCl at 60-70°C for 30 mins, thawed aliquots are stable for one day at room temperature and up to a week when stored at 2-8°C. Do not freeze again.
<b>Stability</b>	2 years after receipt (unopened and as supplied).
<b>MSDS</b>	Available on request

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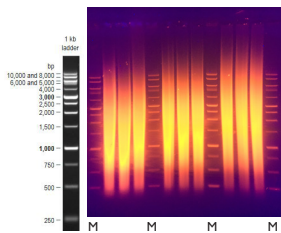
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#### Poly(I:C) Size Analysis



**FIGURE:**

Different Poly(I:C) lots were dissolved in endotoxin-free and sterile ddWater (Cat. No.: IAX-900-002) at 10mg/ml and applied at 5 µg per lane. 100 ng of 1 kb DNA Ladder (Biotium) was used as a size marker and run on a 0.7% agarose/TBE gel containing 1x GelRed<sup>®</sup> Nucleic Acid Gel Stain (Biotium) in 1x TBE at 8 V/cm for 60 minutes. The molecular size of all Poly(I:C) preparations show abundant species with a size larger than 1.5 kb (High Molecular Weight: HMW).

#### Product Information

- Synthetic double-stranded (ds) RNA, such as polyriboinosinic acid-polyribocytidylic acid, Poly(I:C), is a mimic of viral dsRNA and, as such, a promising immunostimulant candidate for vaccines directed against intracellular pathogens.
- Poly(I:C) is recognized by at least two types of PRRs: RIG-I-like receptors (RLRs; RIG-I and MDA5) and toll-like receptor 3 (TLR3) and strongly drives cell-mediated immunity and a potent type I interferon response.

#### Product Specific References

- [1] *Inhibition of PI3Kδ Enhances Poly I:C-Induced Antiviral Responses and Inhibits Replication of Human Metapneumovirus in Murine Lungs and Human Bronchial Epithelial Cells.* Fujita A, et al. *Frontiers in Immunology* (2020); 11:432
- [2] *Polyinosinic: polycytidylic acid induced inflammation enhances while lipopolysaccharide diminishes alloimmunity to platelet transfusion in mice.* Tran JQ, Muench MO, Gaillard B, Darst O, Tomayko MM, Jackman RP. *Front. Immunol.* (2023); 14:1281130

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#### General Information

- The innate immune response to pathogen infection is initiated by the recognition of pathogen-derived components through pattern-recognition receptors (PRRs). Signaling through PRRs culminates in the induction of an array of cytokines that are important for the initial elimination of infected pathogens and the subsequent development of adaptive immunity. Double-stranded RNA (dsRNA), a by-product of viral replication, or a synthetic analogue of dsRNA.
- The antitumor responses that are induced by TLR3 agonists are attributed to their capability to stimulate antigen-presenting cells (APCs), such as DCs, which in turn activate tumor-specific T cell responses and to their capacity to switch the phenotype of myeloid suppressor cells and tumour-associated macrophages from immunosuppressive to immunosupportive.
- Poly(I:C)-induced cell death has also gained considerable attention as a tool to study the 'Ripoptosome' or 'Necrosome' complex, a novel intracellular signaling complex, thought to induce regulated necrosis, also called Necroptosis.

#### References

- [1] *The 'complexities' of life and death: Death receptor signalling platforms.* Dickens LS, et al. *Exp. Cell Res.* (2012); 18:1269
- [2] *Pick your poison: the Ripoptosome, a cell death platform regulating apoptosis and necroptosis.* Feoktistova M, et al. *Cell Cycle* (2012); 11:460
- [3] *The Ripoptosome: death decision in the cytosol.* Bertrand MJ, Vandenabeele P. *Mol. Cell* (2011); 43:323
- [4] *Proapoptotic signalling through Toll-like receptor-3 involves TRIF-dependent activation of caspase-8 and is under the control of inhibitor of apoptosis proteins in melanoma cells.* Weber A, et al. *Cell Death Differ.* (2010); 17:942
- [5] *TLR3/TICAM-1 signaling in tumor cell RIP3-dependent necroptosis.* Seya T, et al. *Oncoimmunology* (2012); 1:917
- [6] *Particulate formulations for the delivery of Poly(I:C) as vaccine adjuvant.* Hafner AM, et al. *Adv. Drug Deliv. Rev.* (2013); 65:1386
- [7] *Exploiting Poly(I:C) to induce cancer cell apoptosis.* Bianchi F, et al. *Cancer biology & therapy* (2017); 18:747
- [8] *Poly IC Triggers a Cathepsin D- and IPS-1-Dependent Pathway to Enhance Cytokine Production and Mediate Dendritic Cell Necroptosis.* Zou J, et al. *Immunity* (2013); 38:717
- [9] *Poly(I:C)-Induced, TLR3/RIP3-Dependent Necroptosis Backs Up Immune Effector-Mediated Tumor Elimination In Vivo.* Takemura R, et al. *Cancer Immunol. Res.* (2015); 3:902
- [10] *A systematic review on Poly(I:C) and poly-ICLC in glioblastoma: adjuvants coordinating the unlocking of immunotherapy.* De Waele J, et al. *Journal of Experimental & Clinical Cancer Research* (2021); 40:213
- [11] *Pan-Caspase Inhibitor zVAD Induces Necroptotic and Autophagic Cell Death in TLR3/4-Stimulated Macrophages.* Chen YS, et al, *Mol. Cells.* (2022); 45:257

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