

## Product Information

### Polyinosinic-Polycytidylic acid

Catalog Numbers **P1530**, **P0913**, **P9582**, and **I3036**

Storage Temperature  $-20\text{ }^{\circ}\text{C}$

Catalog Number **P1530**: Poly (I:C) sodium salt

Catalog Number **P0913**: Poly (I:C) sodium salt,  
 $\gamma$ -irradiated

Catalog Number **P9582**: 10% Poly (I:C) with sodium  
chloride and sodium phosphate buffer salts

Catalog Number **I3036**: 10% Poly (I:C) with sodium  
chloride and sodium phosphate buffer salts,  
 $\gamma$ -irradiated

CAS RN: 42424-50-0 (sodium salt)

Synonyms: Poly(I)-Poly(C); Poly (I:C)

#### Product Description

Double-stranded RNA (dsRNA) is a molecular pattern associated with viral infection because it is produced by most viruses at some point during their replication.

Toll-like receptors (TLRs) are a family of innate immune-recognition receptors that recognize molecular patterns associated with microbial pathogens (Pathogen-Associated Molecular Patterns, PAMPs), and induce antimicrobial immune responses.

Mammalian TLR3 is an intracellular receptor, which recognizes polyinosine-polycytidylic acid [Poly (I:C)], may potentially form dimers, and can activate Nuclear Factor  $\kappa$ B (NF- $\kappa$ B).<sup>1</sup> TLR3 can also activate the production of type I interferons (IFNs) leading to cytokine production through three different pathways, depending on the Poly (I:C) chain length.<sup>2,3</sup>

Transfection of Poly (I:C) into NIT-1 cells has been used as a model of intracellular dsRNA-induced  $\beta$  cell apoptosis. Eighteen hours post transfection, 45% of the cells were apoptotic with an increase in NF- $\kappa$ B, p50/p65 nuclear translocation, and cleavage of caspases 3 and 8, as well as transcriptional induction of caspase 12, Fas, IL-15, and the TNF receptor-associated ligand (TRAIL).<sup>4</sup>

It has been suggested that Poly(I:C) is one of the most appropriate generators of stable mature dendritic cells (DC). These mature DC might generate *in vivo* effective immune responses after injection due to their ability to secrete bioactive IL-12 after CD40 ligation.<sup>5</sup>

Poly (I:C) was used as a potent adjuvant to enhance the specific antitumor immune responses against a peptide-based vaccine.<sup>6</sup>

The products are supplied as lyophilized powders.

Purity:  $\geq 99\%$  (TLC, less than 1% free nucleotides)

#### 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

The products are soluble in water (10 mg/ml), yielding a very faint hazy to clear, colorless solution.

The products require ionic strength to maintain the double-strand structure. To prevent denaturation, reconstitute Catalog Numbers P1530 and P0913 in solutions with physiological salt concentrations (e.g., saline solution). Reconstitution may prove difficult, and require heating ( $50\text{ }^{\circ}\text{C}$ ) and cooling to achieve re-annealing.

Reconstitution of Catalog Numbers P9582 and I3036 at  $\sim 10$  mg/ml of water yields a polynucleotide in physiological phosphate buffered solution.

#### Storage/Stability

Store the products desiccated at  $-20\text{ }^{\circ}\text{C}$ . Under these conditions the products remain active for 3 years.

## References

1. Ranjith-Kumar, C.T. et al., Biochemical and functional analysis of the human Toll-Like Receptor 3 ectodomain. *J. Biol. Chem.*, **282**, 7668-7678 (2007)
2. Alexopoulou, L. et al., Recognition of double-stranded RNA and activation of NF-kappaB by toll-like receptor-3. *Nature*, **413**, 732-8 (2001).
3. Kato, H. et al., Length-Dependent Recognition of double-stranded ribonucleic acids by retinoic acid-inducible gene-I and melanoma differentiation-associated gene 5. *J. Exp. Med.*, **205**, 1601-1610 (2008)
4. Robbins, M.A. et al., Nuclear factor-kappaB translocation mediates double-stranded ribonucleic acid-induced NIT-1 beta-cell apoptosis and up-regulates caspase-12 and tumor necrosis factor receptor-associated ligand (TRAIL). *Endocrinology*, **144**, 4616-25 (2003).
5. Rouas, R. et al., Poly(I:C) used for human dendritic cell maturation preserves their ability to secondarily secrete bioactive IL-12. *International Immunology*, **16**, 767-73 (2004).
6. Cui, Z., and Qiu, F., Synthetic double-stranded RNA poly(I:C) as a potent peptide vaccine adjuvant: therapeutic activity against human cervical cancer in a rodent model. *Cancer Immunology and Immunotherapy*, **55**, 1267-79 (2006).

RBG,EM,ES-S,PHC,MAM 01/12-1