# Polyinosinic-polycytidylic acid sodium

**Cat. No.:** HY-135748

**CAS No.:** 42424-50-0

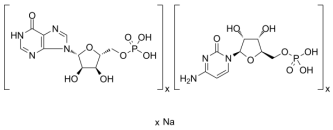
**Molecular Formula:** $(C_{10}H_{13}N_4O_8P)x.(C_9H_{14}N_3O_8P)x.xNa$

**Target:** Toll-like Receptor (TLR); Apoptosis

**Pathway:** Immunology/Inflammation; Apoptosis

**Storage:** -20°C, sealed storage, away from moisture

* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



## SOLVENT & SOLUBILITY

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| **In Vitro** | $H_2O$ : 10 mg/mL (Need ultrasonic and warming) |
| **In Vivo** | 1. Add each solvent one by one: PBS<br>Solubility: 6.67 mg/mL (Infinity mM); Clear solution; Need ultrasonic and warming and heat to 60°C |

## BIOLOGICAL ACTIVITY

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| **Description** | Polyinosinic-polycytidylic acid (Poly(I:C)) sodium is a synthetic analog of double-stranded RNA and an agonist of toll-like receptor 3 (TLR3) and retinoic acid inducible gene I (RIG-I)-like receptors (RIG-I and MDA5). Polyinosinic-polycytidylic acid sodium can be used as a vaccine adjuvant to enhance innate and adaptive immune responses, and to alter the tumor microenvironment. Polyinosinic-polycytidylic acid sodium can directly trigger cancer cells to undergo apoptosis[1][2]. |
| **$IC_{50}$ & Target** | TLR3 |
| **In Vitro** | Polyinosinic-polycytidylic acid (20 ng/mL; 24 hours; WM793, WM278, WM239A, WM9 and 1205Lu cells) treatment strongly reduces viability from 100% in controls to 20%–50% within 24 hours[1].<br>Polyinosinic-polycytidylic acid (200 ng/mL; 24 hours; 1205Lu cells) treatment induces apoptosis in 1205Lu cells[1].<br>Polyinosinic-polycytidylic acid (3 ng/mL; 24 hours; 1205Lu cells) treatment induces IFN-β expression in melanoma cells. Silencing of RIG-I and MDA-5 confirmed that induction of IFN-β by Polyinosinic-polycytidylic acid required RIG-I and MDA-5, respectively, and that required IPS-1[1].<br>Polyinosinic-polycytidylic acid (5 ng/mL; 24 hours; 1205Lu cells) treatment reveals active subunits of caspase-9 and caspase-8 in melanoma cells[1].<br>Polyinosinic-polycytidylic acid sodium is prepared for injection by resuspending in sterile saline, heating to 50 °C at a concentration of 2 mg/mL to ensure complete solubilisation and then allowing to cool naturally to room temperature to ensure proper annealing of double-stranded RNA. Polyinosinic-polycytidylic acid is stored at -20 °C until use[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only.<br>Cell Viability Assay[1] |

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| Cell Line: | WM793, WM278, WM239A, WM9 and 1205Lu cells |
| Concentration: | 20 ng/mL |

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| Incubation Time: | 24 hours |
| Result: | Strongly reduced viability from 100% in controls to 20%–50% within 24 hours. |

Apoptosis Analysis[1]

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| Cell Line: | 1205Lu cells |
| Concentration: | 200 ng/mL |
| Incubation Time: | 24 hours |
| Result: | Induced apoptosis in 1205Lu cells. |

RT-PCR[1]

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| Cell Line: | 1205Lu cells |
| Concentration: | 3 ng/mL |
| Incubation Time: | 24 hours |
| Result: | Induced IFN-β expression in melanoma cells. |

Western Blot Analysis[1]

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| Cell Line: | 1205Lu cells |
| Concentration: | 5 ng/mL |
| Incubation Time: | 24 hours |
| Result: | Revealed active subunits of caspase-9 and caspase-8 in melanoma cells. |

**In Vivo**

Polyinosinic-polycytidylic acid treatment inhibits tumor growth in NOD/SCID immunodeficient mice injected with 1205Lu cells. The level of human DNA is 50% lower in mice treated with Polyinosinic-polycytidylic acid[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Adv Funct Mater. 29 August 2022.
- Chem Eng J. 2021 Aug 15;418:129392.
- Phytomedicine. 2021, 153495.
- Liver Int. 2022 Oct 17.
- Mol Ther Oncolytics. 25 August 2022.

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## REFERENCES

[1]. Besch R, et al. Proapoptotic signaling induced by RIG-I and MDA-5 results in type I interferon-independent apoptosis in human melanoma cells. J Clin Invest. 2009 Aug;119(8):2399-411.

[2]. Cheng YS, et al. Anticancer function of polyinosinic-polycytidylic acid. Cancer Biol Ther. 2010 Dec 15;10(12):1219-23.

[3]. Robert Field, et al. Systemic challenge with the TLR3 agonist poly I:C induces amplified IFNalpha/beta and IL-1beta responses in the diseased brain and exacerbates chronic neurodegeneration. Brain Behav Immun. 2010 Aug;24(6):996-1007.



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