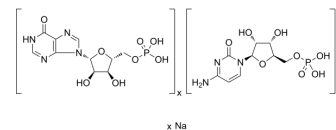


Polyinosinic-polycytidylic acid sodium

Cat. No.:	HY-135748
CAS No.:	42424-50-0
Molecular Formula:	$(C_{10}H_{13}N_4O_8P)_x \cdot (C_9H_{14}N_3O_8P)_x \cdot xNa$
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

In Vitro	H ₂ O : 10 mg/mL (Need ultrasonic and warming)
In Vivo	1. Add each solvent one by one: PBS Solubility: 6.67 mg/mL (Infinity mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

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]} .				
IC₅₀ & Target	TLR3				
In Vitro	<p>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].</p> <p>Polyinosinic-polycytidylic acid (200 ng/mL; 24 hours; 1205Lu cells) treatment induces apoptosis in 1205Lu cells^[1].</p> <p>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].</p> <p>Polyinosinic-polycytidylic acid (5 ng/mL; 24 hours; 1205Lu cells) treatment reveals active subunits of caspase-9 and caspase-8 in melanoma cells^[1].</p> <p>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]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[1]</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Cell Line:</td> <td>WM793, WM278, WM239A, WM9 and 1205Lu cells</td> </tr> <tr> <td>Concentration:</td> <td>20 ng/mL</td> </tr> </table>	Cell Line:	WM793, WM278, WM239A, WM9 and 1205Lu cells	Concentration:	20 ng/mL
Cell Line:	WM793, WM278, WM239A, WM9 and 1205Lu cells				
Concentration:	20 ng/mL				

Incubation Time:	24 hours
Result:	Strongly reduced viability from 100% in controls to 20%–50% within 24 hours.
Apoptosis Analysis ^[1]	
Cell Line:	1205Lu cells
Concentration:	200 ng/mL
Incubation Time:	24 hours
Result:	Induced apoptosis in 1205Lu cells.
RT-PCR ^[1]	
Cell Line:	1205Lu cells
Concentration:	3 ng/mL
Incubation Time:	24 hours
Result:	Induced IFN- β expression in melanoma cells.
Western Blot Analysis ^[1]	
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.
- ACS Nano. 2025 Jan 23.
- Chem Eng J. 2021 Aug 15;418:129392.
- Autophagy. 2024 May 18.
- J Exp Clin Cancer Res. 2025 Feb 7;44(1):45.

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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 IFN α /beta and IL-1beta responses in the diseased brain and exacerbates chronic neurodegeneration. *Brain Behav Immun*. 2010 Aug;24(6):996-1007.

Caution: Product has not been fully validated for medical applications. For research use only.

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