Poly (I:C):Kanamycin (1:1) (sodium)

Cat. No.: HY-135748A

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)

Poly (I:C):Kanamycin (1:1) (sodium)

SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (Need ultrasonic)
DMSO : < 1 mg/mL (ultrasonic;warming;heat to 60°C) (insoluble or slightly soluble)

BIOLOGICAL ACTIVITY

Description

Poly (I:C):Kanamycin (1:1) sodium is an isometric complex of Poly (I:C) (HY-135748) and Kanamycin (HY-16566). Poly(I:C) sodium, a synthetic analog of double-stranded RNA, is a TLR3 and retinoic acid-inducible gene I receptor (RIG-I and b>MDA5) agonist. Poly(I:C) sodium can be used as a vaccine adjuvant to enhance innate and adaptive immune responses and induce apoptosis in cancer cells[1][2]. Kanamycin is an orally active antibacterial agent (Gram-negative/positive bacteria) that inhibits translocation and causes miscoding by binding to the 70S ribosomal subunit. Kanamycin shows good inhibitory activity against Mycobacterium tuberculosis (susceptible and drug-resistant) and Klebsiella pneumoniae, and can be used in the research of tuberculosis and pneumonia[3][4][5][6].

IC_{50} & Target

TLR3[2], RIG-I[2], MDA5[2], apoptosis[2]

In Vitro

Poly (I:C) sodium (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].
Poly (I:C) sodium (200 ng/mL; 24 hours; 1205Lu cells) treatment induces apoptosis in 1205Lu cells[1].
Poly (I:C) sodium (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 Poly (I:C) sodium required RIG-I and MDA-5, respectively, and that required IPS-1[1].
Poly (I:C) sodiumd (5 ng/mL; 24 hours; 1205Lu cells) treatment reveals active subunits of caspase-9 and caspase-8 in melanoma cells[1].

Kanamycin (0.1-100 μg/mL; 2 weeks) exhibits good antibacterial activity (MIC=1-5 μg/mL) to various strains of mycobacteria in vitro[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Poly (I:C) sodium 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 Poly (I:C) sodium[1].

Kanamycin (2, 4 mg/kg; s.c.; once daily, 6 times a week for 3 weeks) inhibits growth of bovine tubercle bacilli in lung and spleen of mice[3].

Kanamycin (1.25, 5 mg/kg; s.c.; single (at 3 h after infection)) inhibits the multiplication of K. pneumonia DT-S in lung, trachea, and blood of mice and in proportion to the dose administration, and also increases the survival rate of mice[4].

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

CUSTOMER VALIDATION

- Adv Funct Mater. 29 August 2022.
- Phytomedicine. 2021, 153495.
- Liver Int. 2022 Oct 17.
- Mol Ther Oncolytics. 25 August 2022.
- SSRN. 2021 Apr 26.

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REFERENCES

[1]. 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.

[2]. 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.

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

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