

ODN 2007

Cat. No.:	HY-150734	
CAS No.:	455348-63-7	
Molecular Weight:	6852.5	
Sequence:	DNA, d(P-thio)(T-C-G-T-C-G-T-T-G-T-C-G-T-T-T-T-G-T-C-G-T-T)	DNA, d(P-thio)(T-C-G-T-C-G-T-T-G-T-C-G-T-T-T-T-G-T-C-G-T-T)
Target:	Toll-like Receptor (TLR)	
Pathway:	Immunology/Inflammation	
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

H₂O : 20 mg/mL (2.92 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent	1 mg	5 mg	10 mg
	Concentration	1 mg	5 mg	10 mg
1 mM	0.1459 mL	0.7297 mL	1.4593 mL	
5 mM	---	---	---	
10 mM	---	---	---	

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description

ODN 2007, a class B CpG ODN (oligodeoxynucleotide), is a Toll-like receptor (TLR) ligand. ODN 2007 can be used as an immunomodulator, vaccine adjuvant, and enhance immune responses in mammals, fish, and humans. ODN 2007 sequence: 5'-TCGTCGTTGTCGTTTTGTCGTT-3'^{[1][2][3]}.

In Vitro

ODN 2007 (1 or 5 µg/mL, 3-18 h) induces significantly chicken macrophage interferon IFN-γ and IFN-β expression^[1]. ODN 2007 (10 µg/mL, 0.5-12 h) can increase levels of phosphorylation of ERK2 and AKT, stimulate the production of NO^[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
RT-PCR^[1]

Cell Line: MQ-NCSU cells (a chicken macrophage cell line)

Concentration: 1 µg/mL, 5 µg/mL

Incubation Time: 3 h, 12 h, 18 h

Result: Significantly stimulated an increase in transcriptional expression of IFN-γ after 3 hours regardless of the dose.

	Increased the mRNA expression of IL-1 β at 5 μ g/mL high dose regardless of the time point.
Western Blot Analysis ^[3]	
Cell Line:	HD11, a replication-deficient avian leukemia virus MC29-transformed macrophage-like cell line
Concentration:	10 μ g/mL
Incubation Time:	0.5 h, 1 h, 3 h, 6 h, 12 h
Result:	Resulted in a significant increase in ERK2 and AKT phosphorylation levels and increased IFN- γ , IL-6 and MIP-3 α mRNA levels. Stimulated an increase in the level of NO.
In Vivo	ODN 2007 (intraperitoneal injection, 1 μ g, once) can enhance the immune response by regulating the expression of immune system-related genes in zebrafish infected with <i>Vibrio traumaticus</i> FJ03-X2 ^[2] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Model:	Zebrafish infected with <i>Vibrio traumaticus</i> FJ03-X2 ^[2]
Dosage:	1 μ g
Administration:	Intraperitoneal injection; once
Result:	Showed a cumulative mortality rate of 15.0% in treated group while the control group reached 42.1%. Showed a significant decrease in the expression levels of all intestinal immune-related genes such as TNF, IFN γ , IL-1 β , IL-10, especially IL-1 β decreased by 99.88%.

REFERENCES

- [1]. Tamiru N Alkie, et al. Characterization of Innate Responses Induced by PLGA Encapsulated- and Soluble TLR Ligands In Vitro and In Vivo in Chickens. PLoS One. 2017 Jan 3;12(1):e0169154.
- [2]. Hua Chen, et al. CpG-ODN 2007 protects zebrafish (*Danio rerio*) against *Vibrio vulnificus* infection. Aquac Res. 2021; 52: 897-905.
- [3]. Audesh Bhat, et al. Role of Hsp90 in CpG ODN mediated immunostimulation in avian macrophages. Mol Immunol. 2010 Mar;47(6):1337-46.

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

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