

ODN 2006 VacciGrade™

CpG ODN, type B (human) - TLR9-based adjuvant

Catalog # vac-2006-1

For research use only. Not for use in humans.

Version # 11E25-MT

PRODUCT INFORMATION

Content:

- 1 mg of lyophilized ODN 2006 VacciGrade™
- 10 ml sterile endotoxin-free physiological water (NaCl 0.9%)

ODN 2006 sequence

5'-tcgtcgttttgcgttttgcgtt-3' (24 mer)

Note: Bases are phosphorothioate (nuclease resistant).

Storage and stability

- ODN 2006 VacciGrade™ is shipped at room temperature and should be stored at -20°C for up to 1 year.
- Upon resuspension, prepare aliquots of ODN 2006 VacciGrade™ and store at -20°C. Product is stable 6 months at -20°C when properly stored. Avoid repeated freeze-thaw cycles.

Quality control

ODN 2006 VacciGrade™ is a preclinical grade preparation of the CpG ODN 2006. It is prepared under strict aseptic conditions and is tested for the presence of endotoxins. ODN 2006 VacciGrade™ is guaranteed sterile and its endotoxin level is <2 EU/mg (determined using an in-house proprietary monocyte activation assay).

METHODS

Preparation of sterile stock solution (2 mg/ml)

- Add 500 µl of the endotoxin-free physiological water provided to the 1 mg ODN 2006 VacciGrade™ vial to obtain a solution at 2 mg/ml.
- Mix the solution by pipetting up and down.

Working Concentration: 20-50 µg/mouse

DESCRIPTION

Synthetic oligodeoxynucleotides containing unmethylated CpG motifs (CpG ODNs), such as ODN 2006 (also known as ODN 7909 or PF-3512676), have been extensively studied as adjuvants¹. These CpG motifs are present at a 20-fold greater frequency in bacterial DNA compared to mammalian DNA². CpG ODNs are recognized by TLR9, which is expressed exclusively on human B cells and plasmacytoid dendritic cells, thereby inducing Th1-dominated immune responses³. Pre-clinical studies conducted in rodents and non-human primates and human clinical trials have demonstrated that CpG ODNs can significantly improve vaccine-specific antibody responses¹.

Three types of stimulatory CpG ODNs have been identified, types A, B and C, which differ in their immune-stimulatory activities^{4,5}. Moreover, CpG ODNs activate TLR9 in a species-specific manner⁶. ODN 1826 VacciGrade™ is a type B CpG ODN specific for mouse TLR9. Type B CpG ODNs contain a full phosphorothioate backbone with one or more CpG dinucleotides and can strongly activate B cells⁴.

ODN 2006 has been tested as an adjuvant in numerous animal models⁷⁻⁹. Research has demonstrated that ODN 2006 is an effective adjuvant for stimulating both antibody^{8,9} and interferon-mediated cellular immune responses⁹.

1. **Steinhagen F. et al., 2010.** TLR-based immune adjuvants. Vaccine [Epub ahead of print]. 2. **Hemmi H. et al., 2000.** A Toll-like receptor recognizes bacterial DNA. Nature 408: 740-5. 3. **Coffman RL. et al., 2010.** Vaccine adjuvants: Putting innate immunity to work. Immunity 33(4):492-503. 4. **Krug A. et al., 2001.** Identification of CpG oligonucleotide sequences with high induction of IFN-alpha/beta in plasmacytoid dendritic cells. Eur J Immunol, 31(7): 2154-63. 5. **Marshall JD. et al., 2005.** Superior activity of the type C class of ISS in vitro and in vivo across multiple species. DNA Cell Biol. 24(2):63-72. 6. **Bauer, S. et al., 2001.** Human TLR9 confers responsiveness to bacterial DNA via species-specific CpG motif recognition. Proc Natl Acad Sci U S A, 98(16):9237-42. 7. **Hartmann G. et al., 2000.** Delineation of a CpG phosphorothioate oligodeoxynucleotide for activating primate immune responses in vitro and in vivo. J. Immunol. 164(3): 1617 - 1624. 8. **Conforti VA. et al., 2007.** The effectiveness of a CpG motif-based adjuvant (CpG ODN 2006) for LHRH immunization. Vaccine 25: 6537-43. 9. **Zhang Y. et al., 2003.** CpG ODN 2006 and IL-12 are comparable for priming Th1 lymphocyte and IgG responses in cattle immunized with a rickettsial outer membrane protein in alum. Vaccine 21:3307-18.

TECHNICAL SUPPORT

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RELATED PRODUCTS

Product	Description	Catalog Code
Adjuvants		
AddaVax™	Squalene-Oil-in-water	vac-adx-10
Alhydrogel® adjuvant 2%	Aluminium hydroxide gel	vac-alu-250
IFA	Incomplete Freund's adjuvant	vac-ifa-10
Poly(I:C) Vaccigrade™	TLR3 agonist	vac-pic
MPLA Vaccigrade™	TLR4 agonist	vac-mpla
Flagellin FliC Vaccigrade™	TLR5 agonist	vac-fla
Gardiquimod Vaccigrade™	TLR7 agonist	vac-gdq
Imiquimod Vaccigrade™	TLR7 agonist	vac-imq
R848 Vaccigrade™	TLR7/8 agonist	vac-r848
ODN 1826 Vaccigrade™	murine TLR9 agonist	vac-1826-1
N-glycolyl-MDP Vaccigrade™	NOD2 agonist	vac-gmdp
OVA Antigens		
EndoFit™ Ovalbumin	For <i>in vivo</i> use; endotoxin level <1EU/mg	vac-pova
Ovalbumin	For detection; Western, ELISA	vac-stova
Ova 257-264	For detection; ELISPOT	vac-sin
Ova 323-339	For detection; ELISPOT	vac-isq

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