

ODN 2006 VacciGrade™

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

Catalog code: vac-2006-1

<https://www.invivogen.com/odn2006-vaccigrade>

For research use only. Not for use in humans.

Version 20A30-MM

PRODUCT INFORMATION

Contents

- 1 mg (129.8 nmol) lyophilized ODN 2006 VacciGrade™
- 10 ml sterile endotoxin-free physiological water (NaCl 0.9%)

ODN 2006 sequence

5'-tcgtcgtttgcgttttgcgtt-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 1 year when properly stored.
- Upon resuspension, prepare aliquots of ODN 2006 VacciGrade™ and store at -20°C. Product is stable for 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

Working Concentrations: 20-50 µg/mouse

Preparation of sterile stock solution (2 mg/ml)

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

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 models^{7,9}. 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* 29(17):3341-55.
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. *PNAS* 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):1617-24.
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.

RELATED PRODUCTS

Product	Description	Cat. Code
2'3'-cGAMP VacciGrade™	STING agonist	vac-nacga23
Alhydrogel® adjuvant 2%	Al(OH) ₃ gel	vac-alu-250
CFA	Complete Freund's Adjuvant	vac-cfa-10
ODN 1826 VacciGrade™	Murine TLR9 agonist	vac-1826-1
Poly(I:C) VacciGrade™	TLR3 agonist	vac-pic

For a complete list of adjuvants provided by InvivoGen, please visit <https://www.invivogen.com/vaccine-adjuvants>.

TECHNICAL SUPPORT

InvivoGen USA (Toll-Free): 888-457-5873

InvivoGen USA (International): +1 (858) 457-5873

InvivoGen Europe: +33 (0) 5-62-71-69-39

InvivoGen Hong Kong: +852 3-622-34-80

E-mail: info@invivogen.com

