

# Pam3CSK4 VacciGrade™

Synthetic triacylated lipopeptide; TLR2-based adjuvant

Catalog code: vac-pms

<https://www.invivogen.com/pam3csk4-vaccigrade>

For research use only. Not for use in humans.

Version 22D13-NJ

## PRODUCT INFORMATION

### Contents

- 1 mg of lyophilized Pam3CSK4 VacciGrade™
- 1.5 ml endotoxin-free water
- 10 ml sterile endotoxin-free physiological water (NaCl 0.9%)

### Storage and stability

- Pam3CSK4 VacciGrade™ is shipped at room temperature and should be stored at 4°C. Lyophilized product is stable for 1 year when properly stored.
- Upon resuspension, prepare aliquots of Pam3CSK4 VacciGrade™ and store at -20°C. Resuspended product is stable for 6 months when properly stored. Avoid repeated freeze-thaw cycles

### Quality control

- Pam3CSK4 VacciGrade™ is a preclinical grade preparation of Pam3CSK4. It is prepared under strict aseptic conditions and is tested for the presence of endotoxins. Pam3CSK4 VacciGrade™ is guaranteed sterile and its endotoxin level is <0.05 EU/μg.
- Purity ≥95% (UHPLC)

## METHODS

**Working Concentration:** 2-20 μg/mouse

### Preparation of sterile stock solution (2 mg/ml)

- Add 500 μl endotoxin-free water (provided) to the 1 mg Pam3CSK4 VacciGrade™ vial.
- Vortex until completely dissolved.
- Further dilutions can be prepared using sterile aqueous solutions for injection, such as the sterile endotoxin-free physiological water (provided).

## CHEMICAL PROPERTIES

**Chemical name:** N-Palmitoyl-S-[2,3-bis(palmitoyloxy)-(2RS)-propyl]-[R]-cysteinyI-[S]-seryl-[S]-lysyl-[S]-lysyl-[S]-lysyl-[S]-lysine

**Solubility:** 2 mg/ml in water

**CAS number:** 112208-01-2

**Formula:** C<sub>81</sub>H<sub>156</sub>N<sub>10</sub>O<sub>13</sub>S • 3TFA

**Molecular weight:** 1852.33 g/mol

## DESCRIPTION

Pam3CSK4 is a synthetic triacylated lipopeptide (LP) that mimics the acylated amino terminus of bacterial LPs. Recognition of Pam3CSK4 is mediated by TLR2 which cooperates with TLR1 through their cytoplasmic domain to induce a signaling cascade leading to the activation of pro-inflammatory transcription factor NF-κB<sup>1,2</sup>.

Several TLR2 agonists, in particular lipopeptides, have been evaluated as vaccine adjuvants. Pam3CSK4 has been proven to be a potent adjuvant for various vaccines, including a sublingual allergy vaccine<sup>3</sup>, flu vaccine<sup>5</sup> and leishmaniasis vaccine<sup>5</sup>. In a preclinical study, Pam3CSK4 was reported to increase antibody responses to flu antigens unlike other TLR ligands<sup>4</sup>. It was shown to exert a strong local response, enhance IgG2a and IgG1 titers and upregulate proinflammatory and Th1 cytokine genes. Pam3CSK4 was also used as an adjuvant to improve the efficacy of a DNA-based vaccine against *Leishmania*<sup>5</sup>. Pam3CSK4 increased antigen specific CD8 cells in immunized mice and induced higher levels of IFN-γ.

1. Aliprantis A. *et al.*, 1999. Cell activation and apoptosis by bacterial lipoproteins through toll-like receptor-2. *Science*. 285(5428):736-9. 2. Ozinsky A. *et al.*, 2000. The repertoire for pattern recognition of pathogens by the innate immune system is defined by cooperation between toll-like receptors. *PNAS*. 97(25):13766-71. 3. Lombardi V. *et al.*, 2008. Toll-like receptor 2 agonist Pam3CSK4 enhances the induction of antigen-specific tolerance via the sublingual route. *Clin Exp Allergy*. 38(11):1819-29. innate immunity to work. *Immunity* 33(4):492-503. 4. Caproni E. *et al.*, 2012. MF59 and Pam3CSK4 Boost Adaptive Responses to Influenza Subunit Vaccine through an IFN Type I-Independent Mechanism of Action. *J Immunol*. 188(7):3088-98. 5. Jayakumar A. *et al.*, 2011. TLR1/2 activation during heterologous prime-boost vaccination (DNA-MVA) enhances CD8+ T Cell responses providing protection against *Leishmania* (Viannia). *PLoS Negl Trop Dis*. 5(6):e1204.

## RELATED PRODUCTS

Product	Description	Cat. Code
2'3'-cGAMP VacciGrade™	STING agonist	vac-nacga23
Alhydrogel® adjuvant 2%	Al(OH) <sub>3</sub> gel	vac-alu-250
CFA	Complete Freund's adjuvant	vac-cfa-10
EndoFit™ Ovalbumin	For <i>in vivo</i> use	vac-pova
MPLA-SM VacciGrade™	TLR4 agonist	vac-mpla
ODN 1826 VacciGrade™	Murine TLR9 agonist	vac-1826-1
Poly(I:C) VacciGrade™	TLR3 agonist	vac-pic
R848 VacciGrade™	TLR7/8 agonist	vac-r848

## TECHNICAL SUPPORT

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