

MPLAs VacciGrade™

Synthetic Monophosphoryl Lipid A; TLR4-based adjuvant

Catalog code: vac-mpls

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

For research use only. Not for use in humans.

Version 18L19-MM

PRODUCT INFORMATION

Contents

- 1 mg MPLAs VacciGrade™
- 10 ml sterile endotoxin-free physiological water (NaCl 0.9%)

Storage and stability

- MPLAs VacciGrade™ is provided as a clear, lipidic film and shipped at room temperature. Store at -20°C. Product is stable for 1 year when properly stored.
- Upon resuspension, prepare aliquots of MPLAs VacciGrade™ and store at -20°C. Resuspended product is stable for 6 months when properly stored. Avoid repeated freeze-thaw cycles.

Quality control

- MPLAs VacciGrade™ is a preclinical grade. It is prepared under strict aseptic conditions. MPLAs VacciGrade™ is guaranteed sterile.

DESCRIPTION

Synthetic lipid A from *E. coli* (MPLAs) is a pure monophosphoryl lipid A compound produced by chemical synthesis. MPLAs activates TLR4 but does not activate TLR2 reflecting its high purity. It is structurally similar to natural MPLA except that it contains 6 fatty acyl groups while MPLA purified from bacteria contains a mixture of 5, 6, and 7 acyl lipid A.

MPLA is a low-toxicity derivative of lipopolysaccharide (LPS), that retains the immunologically active lipid A portion of the parent molecule. Both LPS and MPLA are TLR4 agonists, but they signal through different adaptors, MyD88 and TRIF, respectively. The reduced toxicity of MPLA is attributed to the preferential recruitment of TRIF upon TLR4 activation, resulting in decreased induction of inflammatory cytokines^{1,2}. Preclinical studies indicate that MPLA induces a strong Th1 response^{1,3}. Although the mechanism of action of MPLA has not been fully elucidated, it has been suggested that MPLA improves vaccine immunogenicity by enhancing antigen presenting cell maturation⁴.

1. Sastry M. *et al.*, 2017. Adjuvants and the vaccine response to the DS-Cav1-stabilized fusion glycoprotein of respiratory syncytial virus. *PLoS One*. 12(10):e0186854. 2. Cui W. *et al.*, 2014. TLR4 ligands lipopolysaccharide and monophosphoryl lipid A differentially regulate effector and memory CD8+ T Cell differentiation. *J Immunol*. 192(9):4221-32. 3. Rhee EG. *et al.*, 2010. TLR4 Ligands Augment Antigen-Specific CD8+ T Lymphocyte Responses Elicited by a Viral Vaccine Vector. *J. Virol*. 84: 10413-9. 4. Didierlaurent A. *et al.*, 2009. AS04, an aluminum salt- and TLR4 agonist-based adjuvant system, induces a transient localized innate immune response leading to enhanced adaptive immunity. *J Immunol* 183(10): 6186-97.

TECHNICAL SUPPORT

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METHODS

Working Concentration: 2 - 20 µg/mouse

Preparation of stock solution (1 mg/ml)

1. Add 1 ml of DMSO to 1 mg MPLAs VacciGrade™ and vortex until completely dissolved, then sonicate.
2. Use immediately or store aliquots at -20°C.
3. Prepare dilutions with endotoxin-free physiological water (provided).

Notes:

- The suspension may appear to contain floating fine particles. Difficulties may be encountered for resuspension at higher concentrations.
- Alternatively, MPLAs VacciGrade™ can be resuspended in DMSO containing 0.2% triethylamine.

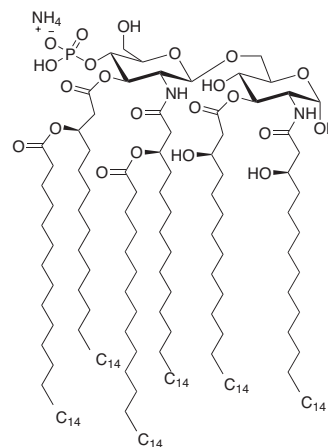
CHEMICAL PROPERTIES

CAS Number: 1246298-63-4

Formula: C₉₆H₁₈₄N₃O₂₂P

Molecular weight: 1763.47

Structure:



RELATED PRODUCTS

Product	Description	Catalog Code
Adjuvants		
AddaVax™	Squalene-Oil-in-water	vac-adx-10
Alhydrogel 2%	Aluminium hydroxide gel	vac-alu-250
c-di-GMP VacciGrade™	STING agonist	vac-nacdg
Flagellin FlIC VacciGrade™	TLR5 agonist	vac-fla
Gardiquimod VacciGrade™	TLR7 agonist	vac-gdq
IFA	Incomplete Freund's adjuvant	vac-ifa-10
Imiquimod VacciGrade™	TLR7 agonist	vac-imq
MPLA-SM VacciGrade™ (MPLA from <i>S. minnesota</i>)	TLR4 agonist	vac-mpla
N-glycolyl-MDP VacciGrade™	NOD2 agonist	vac-gmdp
ODN 1585 VacciGrade™	murine TLR9 agonist	vac-1585-1
ODN 1826 VacciGrade™	murine TLR9 agonist	vac-1826-1
ODN 2006 VacciGrade™	human TLR9 agonist	vac-2006-1
ODN 2395 VacciGrade™	human/murine TLR9 agonist	vac-2395-1
Pam3CSK4 VacciGrade™	TLR2 agonist	vac-pms
Poly(I:C) VacciGrade™	TLR3 agonist	vac-pic
R848 VacciGrade™	TLR7/8 agonist	vac-r848
TDB VacciGrade™	Mincle agonist	vac-tdb
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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