

R848 VacciGrade™

Imidazoquinoline compound; a TLR7/8-based adjuvant

Catalog # vac-r848

For research use only. Not for use in humans.

Version # 16E20-MM

PRODUCT INFORMATION

Content:

- 5 mg of lyophilized R848 VacciGrade™
- 10 ml sterile endotoxin-free physiological water (NaCl 0.9%)

Storage and stability

- R848 VacciGrade™ is shipped at room temperature and should be stored at 4°C or -20°C. Lyophilized product is stable for 1 year when properly stored.
- Upon resuspension, prepare aliquots of R848 VacciGrade™ and store at -20°C for long term storage. Resuspended product is stable for 6 months when properly stored. Avoid repeated freeze-thaw cycles

Quality control

R848 VacciGrade™ is a preclinical grade preparation of R848 (resiquimod). It is prepared under strict aseptic conditions and is tested for the presence of endotoxins. R848 VacciGrade™ is guaranteed sterile and its endotoxin level is <1 EU/mg.

METHODS

Working Concentration: 10-100 µg/mouse

Preparation of sterile stock solution (1 mg/ml)

- Add 5 ml endotoxin-free physiological water to the 5 mg R848 VacciGrade™ vial to obtain a solution at 1 mg/ml.
- Mix the solution by pipetting up and down.

CHEMICAL PROPERTIES

CAS number: 144875-48-9 (free base)

Formula: C₁₇H₂₂N₄O₂ • HCl

Molecular weight: 350.8

Solubility: 1 mg/ml in physiological water

DESCRIPTION

R848 (resiquimod), a small molecular weight imidazoquinoline compound, is an immune response modifier with potent antiviral and antitumor activities¹. R848 is being evaluated as an adjuvant in FDA-approved clinical vaccine trials. R848 immune properties result from its ability to induce the production of pro-inflammatory cytokines through the activation of Toll-like receptor (TLR)-7 and TLR8². *In vitro* and *in vivo* studies have shown that R848 promotes the secretion of Th1 cytokines, including IFN-γ, IFN-α, IL-12 and TNF-α³⁻⁷. R848 is capable of skewing antibody responses toward a Th1 IgG2a response and away from a Th2 IgE response, a feature mediated in part by IFN-α and IL-12. Unlike most adjuvants, R848 can be administered by a different route than the antigen, suggesting that it does not produce a depot effect. Preclinical studies in mice have shown that R848 is able to promote adaptive immune responses to codelivered antigens and provide protection against live infection challenges^{4, 6, 8, 9}.

1. Stanley MA., 2002. Imiquimod and the imidazoquinolines: mechanism of action and therapeutic potential. *Clin Dermatol* 27:571-7. **2. Hemmi H. et al., 2002.** Small anti-viral compounds activate immune cells via the TLR7 MyD88-dependent signaling pathway. *Nat. Immunol.* 3:196-200. **3. Wagner TL. et al., 1999.** Modulation of TH1 and TH2 cytokine production with the immune response modifiers, R-848 and imiquimod. *Cell. Immunol.* 191, 10-19. **4. Vasilakos JP. et al., 2000.** Adjuvant activities of immune response modifier R-848: comparison with CpG ODN. *Cell. Immunol.* 204:64-74. **5. Thomsen L. et al., 2004.** Imiquimod and resiquimod in a mouse model: adjuvants for DNA vaccination by particle-mediated immunotherapeutic delivery. *Vaccine* 22:1799-1809. **6. Baldwin SL. et al., 2009.** Intradermal immunization improves protective efficacy of a novel TB vaccine candidate. *Vaccine* 27:3063-3071. **7. Ma Y. et al., 2010.** Assessing the immunopotency of Toll-like receptor agonists in an *in vitro* tissue-engineered immunological model. *Immunology* 130:374-387. **8. Tomai MA. et al., 2000.** The immune response modifiers imiquimod and R-848 are potent activators of B lymphocytes. *Cell. Immunol.* 203:55-65. **9. Zhang WW. & G. Matlashewski. 2008.** Immunization with a Toll-like receptor 7 and/or 8 agonist vaccine adjuvant increases protective immunity against *Leishmania major* in BALB/c mice. *Infect. Immun.* 76:3777-3783.

TECHNICAL SUPPORT

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RELATED PRODUCTS

Product	Description	Catalog Code
Alum and Emulsions		
AddaVax™	Squalene-Oil-in-water	vac-adx-10
Alhydrogel® adjuvant 2%	Aluminium hydroxide gel	vac-alu-250
CFA	Complete Freund's adjuvant	vac-cfa-10
IFA	Incomplete Freund's adjuvant	vac-ifa-10
PRR Ligands		
c-di-AMP VacciGrade™	STING agonist	vac-nacda
c-di-GMP VacciGrade™	STING agonist	vac-nacdg
2'3'-cGAMP VacciGrade™	STING agonist	vac-nacga23
3'3'-cGAMP VacciGrade™	STING agonist	vac-nacga
Flagellin FliC VacciGrade™	TLR5 agonist	vac-fla
Gardiquimod VacciGrade™	TLR7 agonist	vac-gdq
Imiquimod VacciGrade™	TLR7 agonist	vac-imq
MPLA VacciGrade™	TLR4 agonist	vac-mpla
MPLAs VacciGrade™ (synthetic MPLA)	TLR4 agonist	vac-mpls
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
Pam3CSK4 VacciGrade™	TLR2 agonist	vac-pms
Poly(I:C) VacciGrade™	TLR3 agonist	vac-pic
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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