

Product Specification Sheet

Pam2CSK4 vaccine adjuvant		
<input type="checkbox"/> Cat. # AV-9020-1	Pam2CSK4 vaccine adjuvant, unlabelled	SIZE: 1 mg
<input type="checkbox"/> Cat. # AV-9020-B	Pam2CSK4 vaccine adjuvant; biotin conjugate	SIZE: 1 mg
<input type="checkbox"/> Cat. # AV-9020-B-100	Pam2CSK4 vaccine adjuvant; biotin conjugate	SIZE: 100 ug
<input type="checkbox"/> Cat. # AV-9020-F	Pam2CSK4 vaccine adjuvant; FITC conjugate	SIZE: 1 mg
<input type="checkbox"/> Cat. # AV-9020-F-100	Pam2CSK4 vaccine adjuvant; FITC conjugate	SIZE: 100 ug

General Information: The word '**adjuvant**' is derived from the Latin word '*adjuvare*' which means '**to help**'. Therefore, Immunologic Adjuvants are added to vaccines to stimulate the immune system's response to the target antigen, but do not in themselves confer immunity. Adjuvants act in various ways in presenting an antigen to the immune system. Adjuvants can act as a depot for the antigen, presenting the antigen over a long period of time, thus maximizing the immune response before the body clears the antigen. Examples of depot type adjuvants are oil emulsions. Adjuvants can also act as an irritant which causes the body to recruit and amplify its immune response. A tetanus, diphtheria, and pertussis vaccine, for example, contains minute quantities of toxins/toxoids produced by each of the target bacteria. The body's immune system develops an antitoxin to the bacteria's toxins, not to the aluminum, but would not respond enough without the help of the aluminum adjuvant. Adjuvants have also evolved as substances that can aid in stabilizing formulations of antigens, especially for vaccines administered for animal health.

Adjuvants augment the effects of a vaccine by stimulating the immune system to respond to the vaccine more vigorously, and thus providing increased immunity to a particular disease. Adjuvants accomplish this task by mimicking specific sets of evolutionarily conserved molecules, so called PAMPs, which include liposomes, lipopolysaccharide (**LPS**), molecular cages for antigen, components of bacterial cell walls (e.g., **flagellins**), and endocytosed nucleic acids such as double-stranded RNA (**dsRNA**), single-stranded DNA (**ssDNA**), and unmethylated CpG dinucleotide-containing DNA (**ODNs**). Natural proteins such as **ovalbumin** or OVA-peptides and key hole limpet hemocyanins (**KLH**) are also being explored not only serve as carrier protein but also as adjuvants. Because immune systems have evolved to recognize these specific antigenic moieties, the presence of an adjuvant in conjunction with the vaccine can greatly increase the innate immune response to the antigen by augmenting the activities of dendritic cells (DCs), lymphocytes, and macrophages by mimicking a natural infection. Furthermore, because adjuvants are attenuated beyond any function of virulence, they pose little or no independent threat to a host organism.

For human vaccines, aluminum hydroxide (Alum) based adjuvants (Aluminum hydroxide or Alhydrogel; Aluminium phosphate or Adjuvax) are the only **FDA-approved adjuvants**. Vaccine components that are formulated in Alum are called "Adsorbed Vaccines". The effectiveness of each salt as an adjuvant depends on the characteristics of the specific vaccine and how the manufacturer prepares the vaccine

Not all vaccines contain Alum because an adjuvant may not have been needed, was not expected to increase the desired immune response, or was going to cause an imbalance in the immune response. For example, **inactivated Polio Virus (IPV/IPOL)** vaccine, measles, mumps and rubella vaccine (**MMR/MMRI/MMRV**), **Varicella or chickenpox vaccine (Varivax/Proquad/MMRV)**, **Meningococcal conjugate (MCV4/Menomune/Menactra)** vaccine, and **influenza vaccines**

(Fluzone/Flulaval/Flumist/Fluvirin etc) do not contain aluminum salts.

Product Information

Pam2CSK4 is a synthetic diacylated lipopeptide (LP). Bacterial lipoproteins are strong immune modulators that activate early innate host responses after infection. LP analogues of these lipoproteins signal either through TLR2/1 or TLR2/6 heterodimers. Toll-like receptor 2/6 (TLR2/6) agonist. Induces TNF- α production in human mononuclear cells.

Also induces proliferation and activation of mouse splenic B cells. According to the current model, triacylated LP like Pam3CSK4, are recognized by TLR2/1, whereas diacylated LP, such as FSL-1, induce signaling through TLR2/6. However, it was reported that diacylated LP, such as Pam2CSK4, induce signaling in a TLR6-independent manner. This finding suggests that both the lipid and peptide part of lipoproteins take part in the specificity of recognition by TLR2 heterodimer.

ADI supplies the Pam2CSK4 in unlabelled, biotin and FITC conjugates.

CAS No.: 868247-72-7

Formula : C₆₅H₁₂₆N₁₀O₁₂S

Mol.wt : 1271.83

Appearance: White solid

Form: provided as a lyophilized powder; sterile.

Solubility: 1 mg/ml in 20% acetonitrile / water

Storage and Stability: Shipped at room temperature and it should be stored at 2-8 C. Long term storage at -20 C for up to 6 months. Avoid repeated freeze thaw cycles.

References: Ding H. F(1990). 31(2), 95-102; Raetz (1985). Microbiology 18, 157-207

Related items:

Catalog#	ProdDescription
AV-9010-1	RWJ 21757 Synthetic vaccine adjuvant
AV-9015-2	TDB (Trehalose-6,6-dibehenate) Synthetic vaccine adjuvant
AV-9025-1	Pam3CSK4 vaccine adjuvant, unlabeled
AV-9025-B	Pam3CSK4 vaccine adjuvant; Biotin labelled
AV-9025-F	Pam3CSK4 vaccine adjuvant; FITC labelled
AV-9030-10	Poly(I:C) (Polyinosinic-Polycytidylic) Synthetic
AV-9030-50	Poly(I:C) (Polyinosinic-Polycytidylic) Synthetic

Complete list is available at:

http://4adi.com/objects/catalog/product/extras/Vaccine_Adjuvants_flr.pdf

AV-9020-1	140515P
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