

Product Specification Sheet

Pertussis Toxin B. Pertussis, vaccine grade

□ Cat. AV-9130-50

Pertussis Toxin B. Pertussis, vaccine grade

SIZE: 50 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 Adjuvos) 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/MMRII/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

Pertussis toxin (PT), a virulence factor produced by *Bordetella pertussis*, is a multi-subunit toxin which binds to most cultured mammalian cells and targets specific G protein, inhibiting the ability of the G protein to function in signaling pathways. Depending on the function of the G protein, the effects of PT can vary. This ability to inhibit pathways utilizing the Gi family of protein-coupled receptors is the basis of the use of PT as a tool in cell biology. PT plays a role in infection by suppressing and modulating various host immune responses to *Bordetella pertussis*. PT has been used to stimulate experimental autoimmune diseases in rodent models, such as experimental autoimmune encephalitis (EAE).

Pertussis toxin is a multi-component protein composed of six non-covalently bound subunits ranging in molecular weight from approximately 9 to 28 kDa. These subunits are designated as S1, S2, S3, S4 and S5 and occur in native pertussis toxin in a ratio of 1:1:1:2:1, where the subunit S4 is present in two copies. Pertussis toxin has been isolated from *Bordetella pertussis* strain 165. It is highly purified and contains all 5 subunits.

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: Kost C, Herzer W (1999). Clin Exp Pharmacol Physiol 26 (5-6): 449-55. Alfano M J Virol 74 (18): 8767-70. Bagley K J Leukoc Biol 72 (5): 962-9.

This product is for in vitro research use only.

Related items:

Catalog# Prod Description

AV-9105-25	Tetanus Toxoid from <i>C. tetani</i> purified, vaccine grade
AV-9110-10	Recombinant purified tetani toxin Light-chain (Non toxic)
AV-9115-10	Recombinant (<i>P. fluorescens</i>) purified tetani toxin C-terminal fragment (~52 Kda, >95% pure, low endotoxin)
AV-9120-500	Purified Diphtheria Toxoid protein antigen grade
AV-9125-100	Purified CRM197 (Diphtheria Toxin mutant) protein vaccine grade
AV-9130-50	Pertussis Toxin B. Pertussis, vaccine grade
AV-9135-1000	Purified Cholera Toxin protein vaccine grade
AV-9135-500	Purified Cholera Toxin protein vaccine grade
AV-9140-100	Purified Recombinant Anthrax Protective Antigen (83 kD) (Non toxic), vaccine grade
AV-9140-1000	Purified Recombinant Anthrax Protective Antigen (83 kD) (Non toxic), vaccine grade
AV-9145-10	Purified Pasteurella multocida Toxin (146 kda), vaccine grade
AV-9150-10	Purified Exotoxin A from <i>P. aeruginosa</i> , vaccine grade

AV-9130-50

140516P

India Contact:

Life Technologies (India) Pvt. Ltd.

306, Aggarwal City Mall, Opposite M2K Pitampura, Delhi - 110034 (INDIA). Ph: +91-11-42208000, 42208111, 42208222, Mobile: +91-9810521400, Fax: +91-11-42208444
Email: customerservice@lifetechindia.com Website: www.lifetechindia.com