



Product Specification Sheet

Calcium phosphate vaccine adjuvant

<input type="checkbox"/> Cat. # AV-1020-100	Calcium phosphate vaccine adjuvant	SIZE: 100 ml
<input type="checkbox"/> Cat. # AV-1020-250	Calcium phosphate vaccine adjuvant	SIZE: 250 ml

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 Calcium phosphate; Aluminum phosphate or Calcium phosphate) 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. To work as an adjuvant, the antigen must be adsorbed to the Alum to keep the antigen at the site of injection.

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

Calcium phosphate has worldwide acceptance and it is used in many vaccines. It is a normal constituent of the body and is thus well-tolerated and readily resorbed. Calcium phosphate is an amorphous, tasteless powder containing excess of calcium oxide. It is commonly used to introduce DNA and transfect eukaryotic cells for molecular biology experiments.

In France, calcium phosphate (CaHPO₄) has been used as an adjuvant with diphtheria-tetanus-pertussis (DTP) vaccines for many years and has been found to be safe and efficient in various field trials.

Related vaccines: diphtheria-tetanus-pertussis (DTP)

Formulation: CaHPO₄

Appearance: white crystalline powder

Form: Calcium phosphate is supplied as ready to use sterile powder.

Storage and Stability: Shipped at room temperature and it should be stored at room temp. DO NOT FREEZE. Stable for 6 months.

Dosage: Mice : 100 µg

References: Gupta and Siber, (1994) 22(1); 53-63. He (2000) 7(6); 899-903 Satish Chandra Goel et. al Indian Journal of Experimental Biology, 51(5), 375-380 (2013); Seung-Chan Jin et. al Journal of Biomedical Nanotechnology, 9(3), 475-478 (2013)

Related Items

Catalog#	ProdDescription
AV-1000-PK-1	Alum Gel Combo, Trial Pak-1 (Contains 10 ml each of Alhydrogel, Adjuphos, and Calcium Phosphate gels)
AV-1010-100	Alhydrogel® 2%, Vaccine adjuvant, FDA Approved
AV-1010-250	Alhydrogel® 2%, Vaccine adjuvant, FDA Approved
AV-1015-100	Adjuphos® aluminum phosphate (Th2) Vaccine adjuvant, FDA Approved
AV-1015-250	Adjuphos® aluminum phosphate (Th2) Vaccine adjuvant, FDA Approved
AV-1020-100	Calcium phosphate vaccine adjuvant
AV-1020-250	Calcium phosphate vaccine adjuvant

Complete list is available at:

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

AV-1020-100 140512P