

Vaccine Adjuvants

Aluminum Hydroxide Gels For Animal Health

www.spipharma.com



Proven Technology



Vaccine Adjuvants

An adjuvant is a substance that enhances and helps the ability of an antigen to stimulate the immune system. Alone, an antigen does not stimulate a significant response. Less vaccine antigen (inactive bacteria, virus or toxin) is

needed when paired with the right adjuvant. SPI Pharma's adjuvants enable vaccines to help eradicate disease, secure food supply, reduce the threat of disease transmission, and/or improve the health of livestock and pets.

Particulate Adjuvants are Widely Used

SPI Pharma's technology is built on highly engineered pseudo-Boehmite. This proven technology can adsorb a large range of proteins and inactivated bacteria/viruses. At pH preparation of vaccines around 5-7, pseudo-Boehmite gels have the property to:

Absorb negatively charged antigens

Slow the release of an inactivated virus or bacteria

Activate and stimulate the immune response

Create a more rapid development of high tittered and long-lasting antibody responses after primary immunization



Reliable Supply

SPI Pharma has served the industry for decades, supplying major vaccine producers with continuous process improvement and innovation (VAC high adsorption), technical support, willingness to optimize and work with customers.

Track Record

SPI Pharma has extensive experience and knowledge of aluminum hydroxide chemistry, with more than 70 years for antacid forms and more than 20 years for VAC gels as a vaccine adjuvant. This expertise [makes a difference](#) in terms of consistency throughout our products with respect to compliance, morphology, particle size distribution, and protein adsorption capacity.

Quality

Manufactured under Excipient GMP conditions. All grades comply with Ph. Eur. Monograph for: "Aluminum Hydroxide, hydrated, for adsorption".

Innovation

VAC 20HA is a high adsorption grade. It reduces redness and swelling at the injection site.

Animal vaccines

Highly contagious diseases:

Foot and Mouth Disease, Classical Swine Fever, Aujeszky's Disease (Pseudorabies), Infectious Bovine Rhinotracheitis (IBR), Avian influenza

Multiple species diseases:

Anthrax, Aujeszky's disease, Bluetongue, Brucellosis (Brucella abortus),

Leptospirosis, Paratuberculosis, Q fever, Rabies, Rinderpest, West Nile fever



Excipients for Swallow Tablets



Taste Masked Actives



ODTs/ODPs



Effervescent Tablets



Vaccine Adjuvants



Soft Gel Capsules



Antacid & Laxative Ingredients



Chewable Tablets & Lozenges



Nutraceutical Applications

Aluminum hydroxide gels for vaccine adjuvants in the veterinary market.

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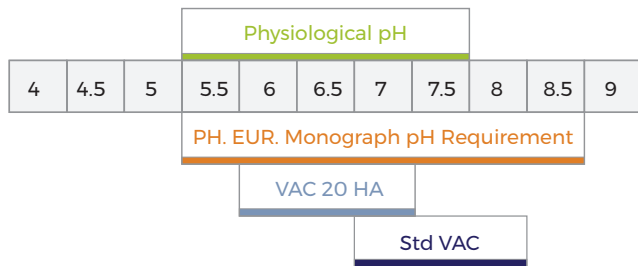
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Vaccine Adjuvants VAC 20 HA

High Adsorption Grade for Animal Health

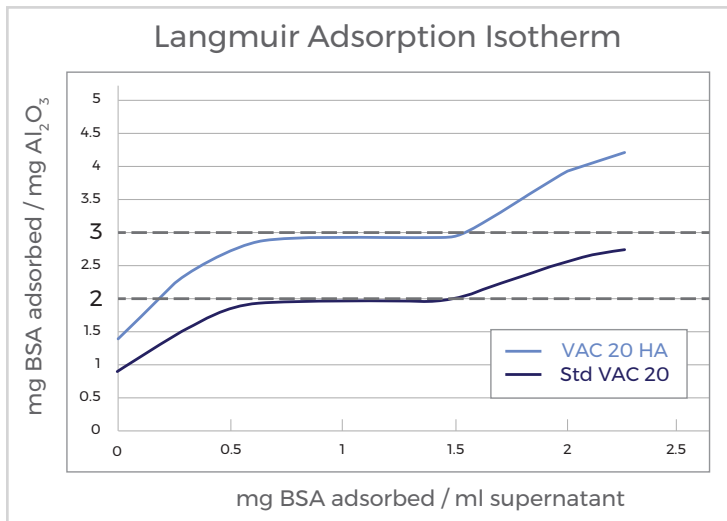
SPI Pharma has extensive experience and knowledge of aluminum hydroxide chemistry, with more than 70 years for antacid forms and more than 20 years for VAC gels as a vaccine adjuvant. Continuing its focus on innovation, we have developed a high protein adsorption grade of vaccine adjuvant. VAC 20 HA has more than 50% more adsorption capacity than standard VAC, reducing redness and swelling at the injection site.



The vaccine adjuvant manufacturing process used by SPI Pharma has been developed and optimized to include a gel, VAC 20 HA, that offers higher protein adsorption capacity with a finer particle size (average particle size 5 µm) and a narrower pH range (6.0-7.0). These characteristics make VAC 20 HA a high performance adjuvant compared to other regular adjuvants.

Our VAC 20 HA grade has a 2% Assay Al₂O₃%. SPI can customize the assay level with this improved adsorption capacity. This grade is validated at our facility in France, which is FDA and ANSM approved.

Figure 1: VAC 20 HA Has 50% More Adsorption Capacity Than the Standard VAC 20 Grade



Aluminium Hydroxide Adjuvants surface charge is pH-dependent.

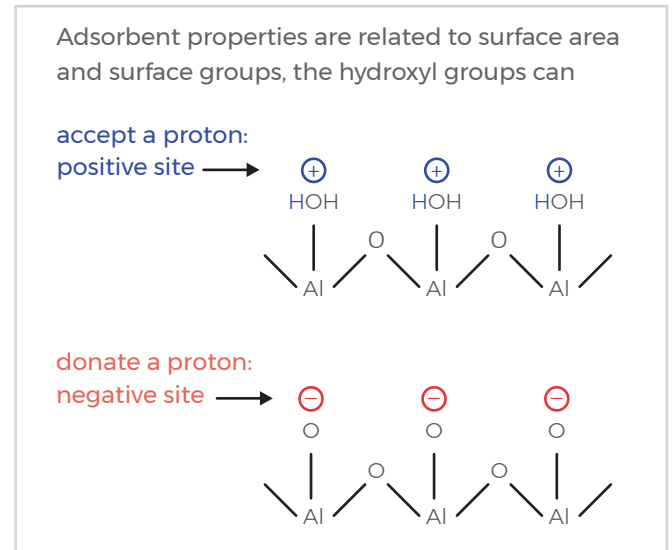
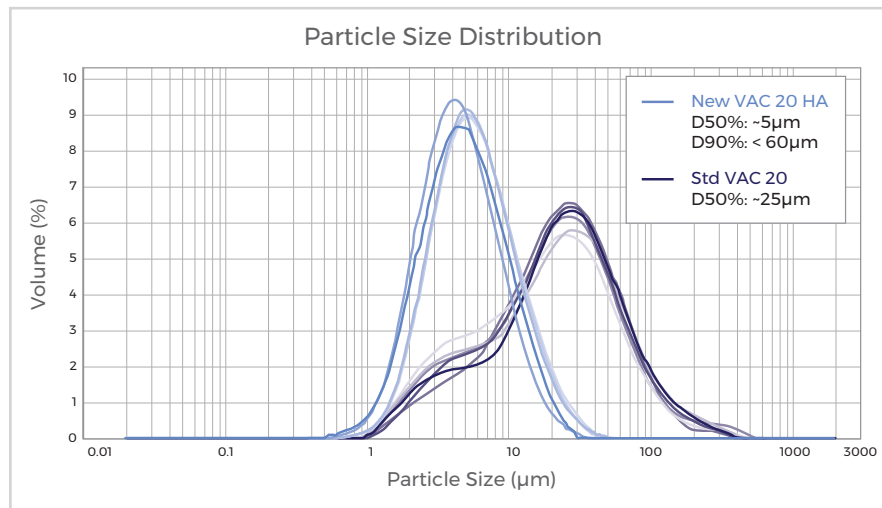


Figure 2: Schematic of the structure of the gel. When the surface of the aluminum oxyhydroxide is positive, it attracts negatively charged antigens. Adsorption capacity is determined by surface area and surface charge from the hydroxyl groups

Figure 3: VAC 20 HA has a finer particle size that reduces inflammation at the point of injection. The finer PSD means more surface area for more adsorption capacity.



Vaccine Adjuvants

Aluminum Hydroxide Gel Grades for Animal Health

Proven Technology

Reliable Supply

Less Antigen With Right Adjuvant

- Adsorb Negatively Charged Antigens**
- Slows Release of Inactivated Virus or Bacteria**
- Activate and Stimulate Immune Response**

Track Record & Quality

- Decades in Industry Supplying Major Vaccine Producers**
- Manufactured under cGMP**
- Ph. Eur. Monograph Compliant**

Innovation With VAC 20 HA

- 50% Added Higher Adsorption Capacity than Standard VAC**
- Finer Particle Size & Narrower pH Range**

Reduce Redness & Swelling

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