Product Specification Sheet

Saponin (Quillaja bark) pure, (sapogenin 25-35%)

□ **Cat.** # AV-4030-10 Saponin (Quillaja bark) pure, (sapogenin 25-35%) **SIZE**:10 g

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.

Product Information

Saponins are steroid or triterpenoid glycosides found in wild or cultivated plants, lower marine animals and some bacteria. Notably, saponins can also activate the mammalian immune system, which have led to significant interest in their potential as vaccine adjuvants. Their unique capacity to stimulate both the Th1 immune response and the production of cytotoxic T-lymphocytes (CTLs) against exogenous antigens makes them ideal for use in subunit vaccines and vaccines directed against intracellular pathogens as well as for therapeutic cancer vaccines.

Saponins are used in permeabilization of cell membranes and separation of low molecular weight contaminants and as an adjuvant in vaccine development.

Saponin based adjuvants have the ability to stimulate the cell mediated immune system as well as to enhance antibody production and have the advantage that only a low dose is needed for adjuvant activity.

Quillaja saponaria saponin (Quillaja saponins) is a heterogenous mixture of molecules varying both in their aglycone and sugar moieties.2 The main aglycone (sapogenin) moiety is quillaic acid, a triterpene of predominantly 30-carbon atoms (hydrophobic) of the D 12-oleanane type. The aglycone is bound to various sugars (hydrophilic) including glucose, glucuronic acid, galactose, xylose, apiose, rhamnose, fucose and arabinose. Sapogenin devoid of any sugars can be isolated by acid hydrolysis of saponins. The structure of a component isolated from the acylated triterpenoid saponin mixture of Quillaja saponaria was reported.

Quillaja saponin is soluble in water yielding micelles with an average MW of 56,000. The solubility is tested at 50 mg/ml deionized water. The solubility in water may be increased by additions of small amounts of alkali. Quillaja saponin is soluble in hot alcohol and is insoluble in most organic solvents. Aqueous solutions will froth when shaken; the froth can be dispersed by alcohol or ether. Quillaja saponin solutions are not autoclavable. Solutions have been found to be stable for about one month when stored at 2-8°C.

Composition: Sapogenin, 25-35%
Form: Powder

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: Coulter et al., (2003) Vaccine. 21(9-10); 946-949. Estrada et al., (2000) Comparative immunology, microbiology and infectious diseases. 23(1); 27-43. Liu et al., (2002) Vaccine. 2002; 20(21-22); 2808-2815.

Related items:

Catalog#	Prod Description
AV-4000-PK-1	Saponins vaccine adjuvant Combo Pak-1 (contains 1mg of QS21,100 mg of Vet-SAP and 1 g of Saponin).
AV-4010-1	Recombinant purified QS-21 (Quillaja saponaria), Vaccine adjuvant, (EU GMP grade) >95%;
AV-4020-1000	Vet-SAP Vaccine adjuvant, (EU GMP grade) >95%;
AV-4030-10	Saponin (Quillaja bark) pure, (sapogenin 25-35%);

Complete list is available at:
http://4adi.com/objects/catalog/product/extras/Vaccine_Adjuvants_flr.pdf

AV-4030-10-Saponin 151105SV

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