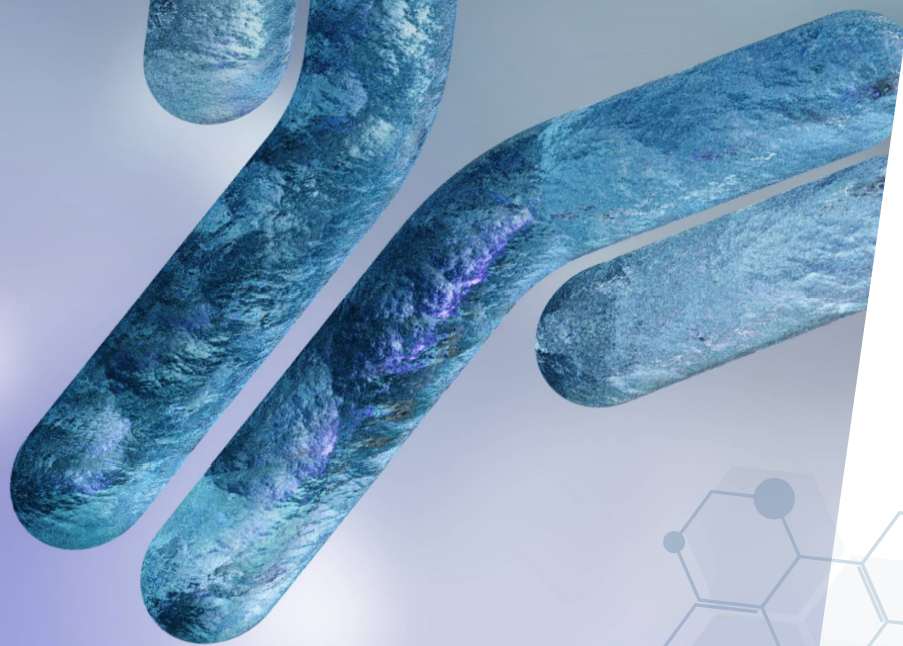


MVP ADJUVANTS[®]

The Adjuvant Company that Understands Vaccines[™]



Discover our portfolio of ready-to-mix oil-in-water emulsions and polymer adjuvants. Now including a series of dual-action adjuvants formulated with added immunostimulants such as polymers incorporated in stable oil-in-water emulsion.



IT ALL STARTS WITH THE RIGHT ADJUVANT

MVP adjuvants® products have been available to animal vaccine producers since 1982.

Our **EMULSIGEN**® adjuvant product was one of the first USDA approved commercial adjuvants for intramuscular and subcutaneous vaccination of pigs. EMULSIGEN is the forerunner of a family of oil-in-water emulsion adjuvants that incorporate various immunostimulants for a dual-effect.

EMULSIGEN-D
EMULSIGEN-DL90
EMULSIGEN-P
EMULSIGEN-BCL

These dual action adjuvants show superior effects, inducing balanced humoral and cellular responses.

Our **EMULSIMUNE**® adjuvant is another derivative of the EMULSIGEN technology with uniquely stabilized particles designed especially for use in fish vaccines.

Our **CARBIGEN**® and **POLYGEN**® adjuvants are polymer-based adjuvants. These polymer adjuvants provide unique structural advantages as antigen carriers and inducers of strong cellular immunity. CARBIGEN and POLYGEN can be used with live attenuated viral or bacterial antigens, as well as inactivated antigens.

CARBIGEN has been found to be particularly applicable for presenting antigens to mucosal membranes such as via intranasal or oral routes.

POLYGEN has an inherent ability to stimulate predominantly cell-mediated immunity. It has been shown effective in companion animal and cattle vaccines.

Custom-made adjuvants: In addition to our standard adjuvant formulations, we can custom manufacture adjuvants according to your specifications in a cost effective and timely manner. All proprietary information as well as the origin of manufacture will be held in confidence. We currently custom manufacture adjuvants for several large U.S. and international veterinary biological manufacturers.

Ready-to-use without the need for homogenization

- Our emulsification process attains a precise hydrophilic-lipophilic balance (HLB) using unique surfactants and stabilizer compounds.
- Immunostimulant compounds are carefully incorporated in the emulsion without disturbing physical and chemical properties of the emulsion.
- Polymer-oil suspensions are prepared through proprietary, step-by-step processes to assure stability.

Vaccine preparation – simple to mix

- No homogenization required.
- Can be mixed with your antigen over a broad range of temperatures using ordinary mixers without harsh homogenization that can damage antigens.

Most industrial mixers such as impeller-type mixer or magnetic stirrers can be used. Mixing time will depend on volume, the design and size of the mixing tank and mixer.

- No temperature control is required for the adjuvanting processes. Most antigens require mixing to be performed at lower temperatures.
- Scale-up is simple and straight-forward because there is no homogenization.
- MVP adjuvants are used at maximum inclusion rate of 20% v/v ratio for parenteral vaccines.

Convenient for scale-up. Simple batching process enables straight-forward scale-up and allows in process controls at all steps to provide batch-to-batch consistency, optimize immunogenicity of the finished product and improve the vaccine safety.

All MVP adjuvants available for retail sale are free of animal origin ingredients.

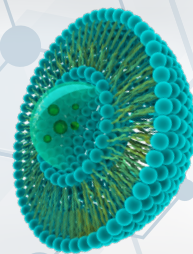
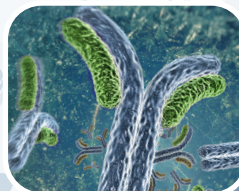
- All ingredients meet USP, EP Regulations or equivalent specifications and have been approved by USDA and regulatory agencies in other countries.

Stability

- MVP adjuvants apply unique emulsion technology with precise HLB to maximize the stability of the oil-in-water adjuvants that incorporate immunostimulatory compounds besides oil, surfactants and stabilizers.
- Optimum particle size assures adjuvant stability and maintains low viscosity.
- MVP adjuvants have been tested and proven to be stable for at least two years

Routes of administration for vaccines using MVP adjuvants

- Intramuscular, subcutaneous, intraperitoneal, or intradermal
- MVP polymer adjuvants can also be administered by mucosal routes such as intranasal spray, oral (including drinking water) and by immersion.



DISCOVER THE DIFFERENCE

FEATURES SUMMARY

- Ease of use in vaccine formulation from R&D through scale-up and into manufacturing because no homogenization or temperature control are required
- Not harsh to antigens of all types including bacterial, viral, subunit, recombinant, parasite, DNA and RNA
- The particle size is carefully designed so as to increase the contact surface area available to antigens, reducing the quantity of oil required in the final product
- Proven effective with wide range of antigens
- Low viscosity makes mixing easier and allows for ease of administration of the vaccine (syringeability)
- The characteristics of our adjuvants help reduce local injection site reactions while still maintaining strong immune stimulation. They have proven to be safer than water-in-oil and water-oil-water emulsion adjuvants
- Suitable for analytic assay without requiring extraordinary extraction
- Equitable pricing when comparing with W/O or W/O/W adjuvants because MVP adjuvants are incorporated at low concentrations: 1% - 20% v/v only
- Stimulate balanced humoral and cell-mediated responses with remarkable safety



Superior Adjuvants for Superior Vaccines

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