Adjuvant selection:

Selecting the right adjuvant is one of the keys to the success of the vaccine in the field. The selected adjuvant must have the best balance between safety and efficacy, and also meet the criteria for the vaccine project:

- Targeted animal species, and its sensitivity
- Traduced to live antigens
- Antigen type (viral, bacterial, parasitic) and nature (soluble, emulsified, lyophilized, peptide, DNA)
- Immune response kinetics (short or long term) and profile (humoral or cellular)
- Route of administration: injection, mucosal, mass vaccination

SEPPIC has developed a wide range of adjuvants based on Montanide™ ISA, ISA and Gel technologies to take into account each of these criteria. According to your model, our team of experts advises you on the selection of the most efficient adjuvant and helps you in your vaccine optimization.

The properties of the antigenic media are crucial for the vaccine efficacy but also for its safety. Each team developing a vaccine will have to study the safety and efficacy profile of the underdevelopment formula according to local market acceptance criteria.

MONTANIDE™ adjuvants are free of animal origin ingredients and can contain a low amount of preservatives (thimerosal).
MONTANIDE™ ISA is a range of ready to use oil adjuvants that can be used to manufacture different types of emulsions: W/O, O/W or W/O/W. These adjuvants can be composed of mineral oil, non mineral oil or a combination. Their specific surfactant chemistry based on mannitol oleate components produces highly refined, powerful and ready to emulsify oil adjuvants.

**APPLICATION**

These very efficient adjuvants are used to achieve a long-term protective immune response. Compared to incomplete Freund Adjuvant (IFA), Montanide™ ISA oil emulsions are very fluid.

**VACCINE PREPARATION**

Stable O/W vaccine emulsions have to be prepared using a low shear rate. These emulsions can be composed of mineral oil, non mineral oil or a combination. The ratio of use can be adjusted from 50% to 70% depending on the expected vaccine characteristics.

**CONCEPT**

O/W formulations are continuous oil-in-water emulsions. Adjuvant selection will consider the type of oil and the expected vaccine characteristics.

**CONCEPT**

W/O/W vaccine emulsions must be prepared in one step process using a low shear rate and controlled temperature at 31°C (+/- 1°C).

**APPLICATION**

These very efficient adjuvants are used to achieve a long-term protective immune response. Compared to incomplete Freund Adjuvant (IFA), Montanide™ ISA oil emulsions are very fluid.

**VACCINE PREPARATION**

Stable O/W vaccine emulsions have to be prepared using a low shear rate.

**CONCEPT**

MONTANIDE™ IMS is a range of ready-to-use water-in-oil adjuvants. These emulsions are a combination of micro-emulsions, for which the size varies from 100-500 nm, and an immunostimulating compound. They contain a low amount of oil and are commercially available in preserved (PR) or sterilized (ST) grades. This range is suitable for a wide range of antigens (bacterial, viral, parasitic or subunit).

**APPLICATION**

These very efficient adjuvants are used to achieve a long-term protective immune response. This type of emulsion is well tolerated and very fluid. They induce a strong short-term protective immune response.

**VACCINE PREPARATION**

Stable W/O/W vaccine emulsions must be prepared using a low shear rate and controlled temperature at 31°C (+/- 1°C). The ratio of use of these adjuvants is 50%.

**FOCUS ON MUCOSAL VACCINATION**

Mucosal administration of vaccines, through oral, spray or intranasal routes allows a reduction of vaccination time by mass vaccination, but also a reduction of safety risk, while increasing the specific local immune response. In order for an adjuvant to be used into a mucosal vaccine, it has to be adjuvant, safe and efficient in stimulating the mucosal immune system. MONTANIDE™ Gel responds to these criteria and has shown to be efficient in different field trials.

**CONCEPT**

MONTANIDE™ Gel is a range of ready-to-disperse innovative polymers adjuvants designed to improve the safety and efficacy of aqueous vaccines. They are based on the dispersion of highly stable gel particles of sodium polyacrylate in water. The deposit effect with effectiveness due to polymer adjuvants properties improves the recruitment of the innate immune system. It provides a significant enhancement of the immune response, with a safety profile equivalent to aluminium salts.

**APPLICATION**

MONTANIDE™ Gel adjuvants can be combined with a wide range of antigens (vaccines) and are recommended for subcutaneous or oral use and for parenteral or mucosal administration.

**VACCINE PREPARATION**

These ready-to-use adjuvants are easy to disperse by gentle mixing and are ready to dilute in aqueous vaccines. They are based on a dispersion of highly stable gel particles of sodium polyacrylate in water. The deposit effect with effectiveness due to polymer adjuvants properties improves the recruitment of the innate immune system. It provides a significant enhancement of the immune response, with a safety profile equivalent to aluminium salts.

MONTANIDE™ Gel 01 & Gel 02

These grades are recommended for a wide variety of livestock species, especially for pig and cattle vaccines. The ratio of use can be adjusted from 10% to 25%, depending on the expected safety and efficacy balance.