

Background

The goal of vaccination is the generation of an efficient immune response to the administered antigen able to provide long-term protection against infection. In the development of an effective vaccine, besides the primary challenge of identifying the most relevant immunogen and efficient regime of immunization, the selection of a potent and safe adjuvant and delivery method is equally critical.

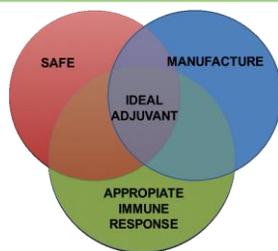
An ideal vaccine delivery system should induce an appropriate immune response, long lasting immunity, antigen protection from degradation (i.e: oral administration), administered preferably by mucosal route and be safe, easy and cheap to manufacture.

Innovation

- ✓ Encapsulation of the antigens with a mucoadhesive polymeric system that increases the mucosal vaccination efficacy.
- ✓ The formation of nanosystems can occur post vaccine administration by *in situ* formation of a nanoparticle-based system.

Advantages

- ✓ Safe with no or few side-effects
- ✓ All excipients are GRAS listed

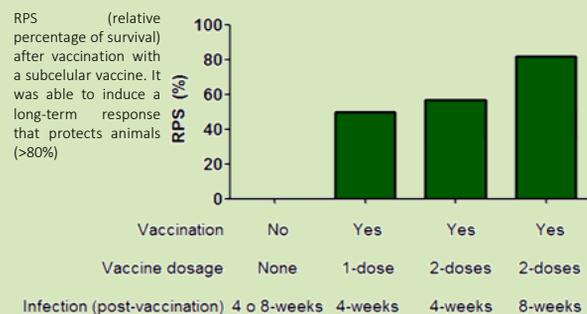


- ✓ Easy and cost-effective production
- ✓ Avoids the use of special equipment and techniques
- ✓ Production using standard processes of solution preparation

- ✓ High residence time in the mucosa-associated lymphoid tissue (MALT)
- ✓ Enhanced antigen presentation and sustained release of the antigen
- ✓ Strong Th1/Th2 balanced response
- ✓ Protection from low pH (gastroresistant formulations)

Efficacy has been demonstrated by an *in vivo* field study
One vaccine product was licensed for veterinary use

About 80% relative percentage of survival after vaccination with a subcellular vaccine based on VAC-Tech polymeric systems by mucosal administration



Fields of application

- ✓ Sublingual, nasal, genital tract, oral administration
- ✓ Sustained release in mucosal tissue triggering mucosal immunity
- ✓ Suitable for allergy and for intracellular pathogens related diseases

IP: Intellectual property rights until 2032/2033

- ✓ PCT/EP2012/056900. Nanoparticles comprising esters of poly (methyl vinyl ether-co-maleic anhydride) and uses thereof
- ✓ PCT/EP2013/052795. Nanoparticles comprising a vegetable hydrophobic protein and a water miscible non-volatile organic solvent and uses thereof

BIONANOPLUS

Bionanoplus is a company specialized in providing solutions to drug delivery problems. Bionanoplus has developed different technology platforms and products based on different mucoadhesive polymeric systems that allow tackling delivery, processing, and efficacy issues of molecules with cheap and easy to scale-up technologies that fit market needs and regulatory requirements.

Bionanoplus is seeking for partner for out-licensing and/or product co-development