LipoVax NTA(Ni) Vaccine Adjuvant
His-Tagged-based Protein or Peptide Carrier Vaccine Adjuvant

Content and product information

LipoVax NTA(Ni) is Ni2+-based liposome adjuvant that can anchor diverse histidine-tagged proteins or peptides to an antigen-presenting carrier to trigger immune response (immunization, vaccination, antibody generation).

Description

LipoVax NTA(Ni) is a liposome-based adjuvant containing phospholipid, cholesterol and nickel-chelating lipid (60:39:1), showing high affinity to bond with electron-rich ligand such as histidine. Therefore, complexes can be generated using Ni-nitrilotriacetic acid (NTA) and his-tagged proteins or peptides. The resulting liposomes are **non-viral biologics delivery systems**, self-assembled from metal-chelating lipid and his-tagged immunogens such as envelope glycoproteins. Nickel-based liposome adjuvant is compatible with most immunization procedures: such as intramuscular, intraepidermal, intravenous, intraperitoneal or subcutaneous.

Kit contents

LV02000: 2x1 mL of LipoVax NTA(Ni).

Certificate of analysis on demand.

Use, handling and storage

For Research Use Only. Not for use in humans. Not for use in diagnostic or therapeutic purposes.

Shipping conditions: Room Temperature.

Storage conditions: 4°C.

Shelf life: 6 months from the date of purchase.

⚠ Do not freeze.

Related Products

Ref	Description
#**AH0250**	AlumVax Hydroxide 2%
#**AP0250**	AlumVax Phosphate 2%
#**SQ0100**	SqualVax, squalene oil-in-water emulsion
#**CFA0100**	Complete Freund's Adjuvant (CFA)
#**CV02000**	CaLiVax-DOTAP Adjuvant
#**LV02000**	LipoVax NTA(Ni)

Method | Protocol

Recommendations before starting:
The ligand or protein antigen should be free of extraneous microbial contamination.

1. Allow LipoVax NTA(Ni) adjuvant solution to reach room temperature before beginning.

2. We recommend diluting antigen mixture in saline buffer or phosphate buffer for a final immunogen concentration of **10-100 µg/100 µL*** and incubate **1 h-2 h** at RT.

3. Mix LipoVax adjuvant with an equal volume of antigen solution for a **1:1** volume ratio.

NOTE: Ratio can be optimized from **1:1** to **1:9** (**100 µL** adjuvant per **900 µL** antigen). Do not store the complexes.

4. For the removal of the non-conjugated ligand, we recommend proceeding by gel filtration or by dialysis. For the dialysis use **1 L** PBS; operate with MWCO below **1,000 kDa.** Quantify the protein association with Protein Assay.

5. Inject into the animal according to the table below.

NOTE: the total lipid concentration is **11.25 mM** comprising **1% mol** of NTA(Ni) lipid. Only half is exposed to the liposome surface, which equals **55 nM** of conjugable lipid.

Typical routes of administration include subcutaneous (SC), intramuscular (IM), intradermal (ID) or intraperitoneal (IP).

Species	IM	SC	ID	IP
Mice, hamsters	0.05-0.1 mL	0.1-0.2 mL	0.025 mL	0.5 mL
Guinea pigs, rats	0.1-0.2 mL	0.2-0.4 mL	0.025 mL	1.0 mL
Rabbits	0.25 mL	0.25 mL	0.025 mL	10 mL
Pigs	0.25-0.5 mL	0.5 mL	0.5 mL	50 mL

Table 1: Recommended volumes (mL) for injection of immunogen/adjuvant mixtures per site of injection for different animal species (*adapted from Leenars MPPA, Hendriksen CFM et al., 1999*).

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Rev 06/25 CS

Envelope protein antigen nanocarrier

A major step toward in vaccination field is an immunogen capable of eliciting neutralizing antibodies. Liposomal nanoparticles platform that presents well-ordered viral trimeric proteins (e.g. gp140 HIV-1) were superior to vehicle proteins for induction of antigen-specific antibody responses. It has been shown that such liposomes promote dendritic cells maturation and elicit long-lasting neutralizing antibodies responses. The antigen-conjugated liposomes are a promising initial lead for the development of new vaccines.

Results

Results presented below demonstrate the effect of LipoVax adjuvant on immune system response:

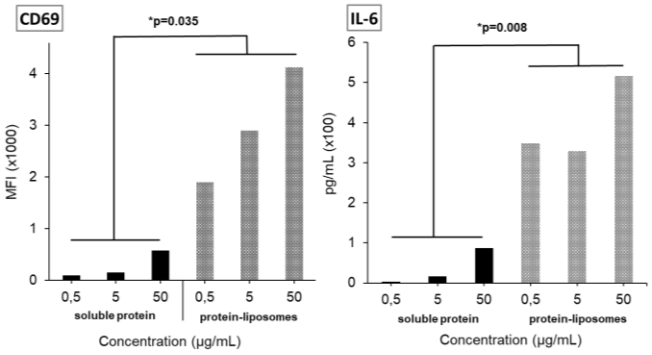

Figure 1. Activation of primary B cells by soluble protein and protein-conjugated liposomes. CD69 cell surface activator was analyzed by flow cytometry and IL-6 level secreted in B cells supernatant was measured by ELISA (*adapted from Wyatt R. T., et al., Cell Reports, 2016; 15(9): 1986-1999*).

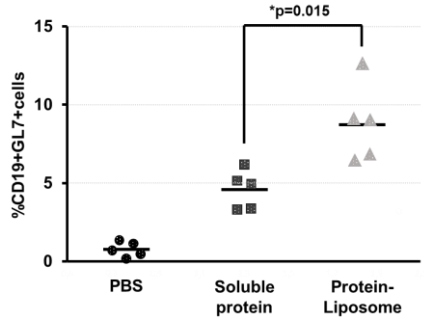

Figure 2. S.c. immunization of C57Bl/6 mice with protein-anchored liposomes induced enhanced germinal center formation. After 14 days, lympho node B cells were analyzed for the activation marker, GL7. The percentages of CD19+ GL7+ cells are enumerated (*adapted from Wyatt R. T., et al., Cell Reports, 2016; 15(9): 1986-1999*).

References and background reading

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