

Two-component nanoparticle adjuvant

Cat. No.: N1520829 | Pack size: 0.5ml; 1ml; 5ml | Storage: Store at 2-8°C, Protected from light

Overview

The two-component nanoparticle adjuvant is a nano-adjuvant system based on QS-7 and QS-21 fractions (water-soluble saponins). It achieves synergistic delivery of dual adjuvants via nanocage particle technology, effectively enhancing immune responses and vaccine efficacy. Prepared using nanocage particle technology, the adjuvant features uniform particle size (PDI < 0.2) with a diameter of 40 nm. It appears as a colorless, transparent ready-to-use solution, which can be directly mixed with antigens (suitable for reconstitution of lyophilized vaccines).

II. Technical Parameters

Item	Specification
Components	QS-7 fraction + QS-21 fraction
Particle size distribution	28–45 nm (PDI < 0.2)
pH value	6.8–7.4
Shelf life	2 years (stored at 2–8 °C, protected from light)

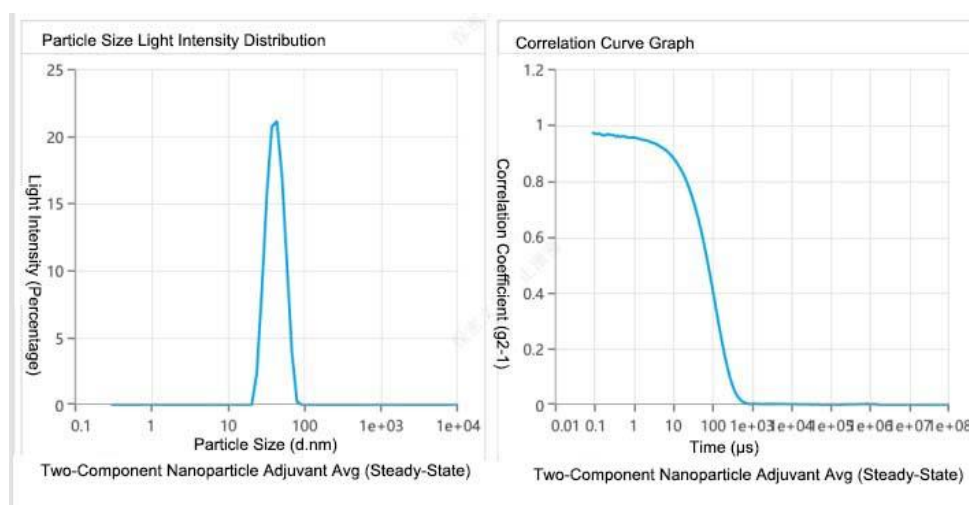


Figure 1 Schematic diagram of particle size distributio

Item	Average	Standard Deviation	Relative Standard Deviation	Minimum	Maximum
Z-Average (nm)	40.09	-	-	40.09	40.09
Polydispersity Index (PI)	0.0528	-	-	0.0528	0.0528
Area Mean Diameter of Volume-weighted Distribution (nm)	42.65	-	-	42.65	42.65
Intercept	0.9798	-	-	0.9798	0.9798
Polydispersity	0.001553	-	-	0.001553	0.001553

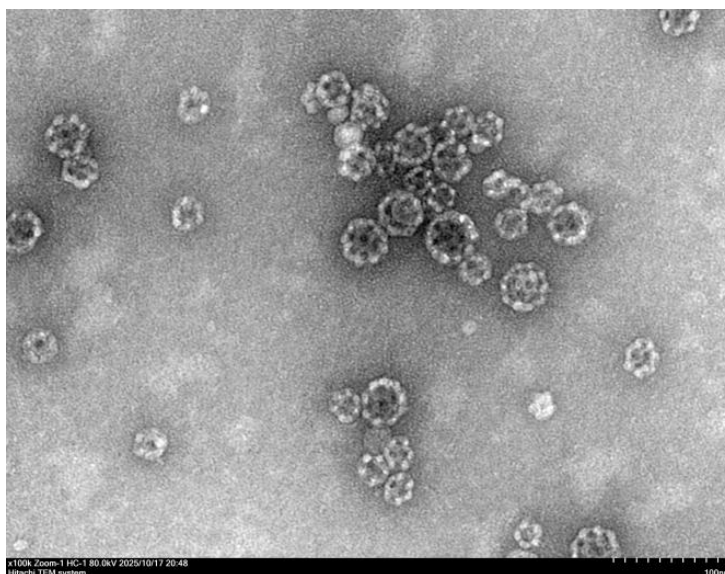


Figure 2 Transmission electron microscopy (TEM) image

III. Product Information

1. Components: Core raw materials are QS-7 fraction (purity $\geq 95\%$) and QS-21 fraction (purity $\geq 98\%$) extracted from *Quillaja saponaria*. All materials comply with EMA Guidelines on Adjuvant Quality and WHO Prequalification (PQ) requirements.

2. Manufacturing and Testing: Each component is tested to meet strict internal standards, including component identification and batch consistency. The adjuvant is manufactured in a GMP-grade cleanroom via a tightly controlled nanocage particle preparation process, with batch-to-batch consistency CV < 5%. Sterility is ensured by 0.22 μm sterile filtration during production. Stability is

verified by accelerated testing (25 °C / 75% RH, 3 months), with active ingredient retention >85% and particle size variation <10%.

3. Immune Response: The adjuvant activates immune responses through multiple synergistic pathways. It promotes the differentiation of CD4⁺ T cells into Th1, Th2, and T follicular helper (Tfh) cells, and induces the generation of CD8⁺ memory T cells. By upregulating co-stimulatory molecules and MHC molecules, it activates CD4⁺ T cells via the MHC class II pathway and CD8⁺ T cells via MHC class I cross-presentation. In addition, the two components trigger the NLRP3 inflammasome pathway, releasing key cytokines such as IL-1 β and IL-18 to further enhance immune effects.

4. Safety: This product presents the following hazards: If swallowed, it may enter the respiratory tract (fatal risk). May cause skin allergic reactions. Causes serious eye irritation.

5. Verified Applications COVID-19 vaccines; Malaria vaccines.

6. Recommended Compatibility Ratios of Two-Component Nanoparticle Adjuvant with Different Antigens.

Vaccine Type	Antigen	Antigen: Adjuvant Ratio
COVID-19 Vaccine	NVX-CoV2373 (S-protein trimer)	5 μ g: 50 μ g (1:10)
Influenza Vaccine	HA Protein (H1N1/H3N2/B Strain)	15 μ g: 50 μ g (1:3.3)
Malaria Vaccine	R21 Antigen (Circumsporozoite Protein)	5 μ g: 50 μ g (1:10)
HIV Vaccine	gp120 Protein	10 μ g: 25 μ g (1:2.5)
RSV Vaccine	F Protein Nanoparticle	60 μ g: 50 μ g (1:1.2)

Note: The concentration of the two-component nanoparticle adjuvant is 100 μ g/mL.

7. Recommended Dosage

Recommended injection volume of antigen/adjuvant mixture at different administration sites in laboratory animals

Species	Maximum Volume
Mouse	50 μ L
Rat	100 μ L
Guinea pig	200 μ L
Rabbit	200 μ L
Human	500 μ L

Specifications

Attribute	Value
Synonyms	Nanoparticle Di-adjuvant
Specifications & Purity	BioReagent,sterile
Stability And Storage	Store at 2-8°C long term (24 months). Store in the dark.
Storage Conditions	Store at 2-8°C, Protected from light
Shipped In	Wet ice. This product requires cold chain shipping. Ground and other economy services are not available.

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