

Title: Quadruple Virus-Like Particle Of Native Sars-Cov-2

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KEYWORDS: Virus-like particle, SARs-COV-2, Quadruple antigen, antiserum

DOMAIN: Biotechnology, Virology

SUMMARY:

The disclosed invention involves the fabrication of virus-like particles (VLPs) having native-like quadruple antigen of SARS-CoV-2 consisting of all four major structural proteins (Spike protein (S), Membrane (M), Envelope (E), and Nucleocapsid protein (N)) of the virus. The present strategy for generating VLPs relied on the main viral protease (Mpro) to cleave M, E, and N from a pre-protein, while S was co-expressed from a separate vector. The proteins are immunologically composed to closely resemble the structural arrangement in the actual virion, as a result mimicking the functionality of the SARS-CoV-2. It shows cross-reactivity with structural protein antibodies and antiserum of SARS-CoV-2, hence eliciting strong humoral and cellular immune responses (study done on mice), indicating excellent immunogenicity. VLPs lack the viral genetic material of authentic virions, hence they are non-infectious which makes them excellent vaccine candidates.

ADVANTAGES:

1. Excellent immunogenicity: The VLPs elicit a humoral and cellular immune response.
2. Safe and effective vaccine candidate.
3. Broad protection against multiple strains of SARs-COV-2.

APPLICATION:

1. VLPs are effective vaccine candidates for SARs-COV-2.
2. VLPs provide a safe and accessible system for studying stages of virus-host interactions.

SCALE OF DEVELOPMENT: Animal studies were conducted on mice.

TECHNOLOGY READINESS LEVEL: TRL 4

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