8th International Conference on
Vaccines, Immunology and Clinical Trials
April 22-23, 2025 Paris, France | Webinar
Volume : 16

Immune enhancement effect of ginseng polysaccharides on SARS-CoV-2 RBD protein subunit vaccine in mice

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The role of adjuvants in enhancing vaccine immune intensity and influencing immune types has been considered. Ginseng polysaccharide (GPS) has been demonstrated to have strong immunoregulatory properties. It is important to explore the feasibility of adding GPS to vaccine adjuvant components to improve the immune response effect of RBD vaccines. Here, we prepared a SARS-CoV-2 RBD antigen using the Escherichia coli expression system and determined that subcutaneous administration of GPS at a dose of 40 mg/kg could effectively activate dendritic cells (DCs) and macrophages (MΦ) in mice. Compared with the RBD group, the RBD+GPS triggered stronger and persistent antibody responses. It is also notable that higher levels of RBD-specific IgG and IgA were distributed in the lungs of RBD+GPS-immunized BALB/c mice. In addition, the RBD+GPS also resulted in lower percentages of IFN-γ+ CD4+ T cells and higher percentages of IFN-γ+ CD8+ T cells and CD8+ Tcm cells. These results suggest that GPS could be a promising vaccine immuno-enhancer for SARS-CoV-2 RBD subunit vaccines to establish stronger systemic and pulmonary mucosal protective immunity.

Biography

Zhang Jing is a respected researcher at the Institute of Basic Medical Sciences and the Department of Biotechnology, School of Life Sciences and Biopharmaceutics, Guangdong Pharmaceutical University, Guangzhou, China. With a strong foundation in biotechnology and medical sciences, Dr. Zhang has been at the forefront of innovative research focused on drug development, molecular biology, and biomedical applications. His work emphasizes translational research that bridges fundamental science with clinical and pharmaceutical advancements. At Guangdong Pharmaceutical University, he plays a pivotal role in mentoring graduate students and leading interdisciplinary research projects aimed at addressing pressing healthcare challenges. Dr. Zhang has contributed to numerous peer-reviewed publications and actively participates in national and international conferences. His research has earned recognition for its originality and impact, making him a valuable member of the scientific community. Through his continued efforts, Dr. Zhang remains dedicated to advancing biopharmaceutical science and improving public health outcome.

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Abstract received :December 23, 2024 | Abstract accepted :December 25, 2024 | Abstract published : 29-04-2025