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Non-clinical evaluation vaccine Sars-COV-2 VLP

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The COVID-19 pandemic, caused by the SARS-CoV-2 virus, has been a defining event of the 21st century, impacting global public health (Moneshwaran et al., 2024). Vaccines developed to combat Covid-19 are promising approach and the technology of virus-like particles (VLPs) that mimic the morphology of a virus and not contain genetic material, they are unable to replicate and without risk of infection (Rezaei & Nazari, 2022). The aim of the study was to evaluate the safety and toxicity of the SARS-CoV-2 VLP vaccine using the recombinant baculoviruses (BVS, BVM, BVN, and BVE - encoding spike, membrane, nucleocapsid, and envelope gene proteins, respectively) in rats model as a promising strategy for the development of vaccines capable of rapidly responding to new variants. Clinical monitoring of the animals was observed throughout of study, did not demonstrate behavioral changes due to the administration of the different vaccine antigens and adjuvant. It did not show quantitative differences in the number of red blood cells, hemoglobin, platelet quantity and biochemical changes between genders. Leukocytes were within normal parameters, despite the occurrence of differences in the total number of lymphocytes in female and eosinophils in male rats between the control groups and BVS particles. Histopathological analyses, pulmonary alterations were observed in both sexes, such as inflammation with a predominance of lymphocytes and plasma cells with few polymorphonuclear and macrophages mainly in the adjuvant, BVS particles and complete vaccine groups and the presence of bronchus-associated lymphoid tissue. In male rats, the presence of degeneration in the germinal epithelium was observed in the antigen fraction and complete vaccine groups, and in females vacuolization in the granulosa cell layer in BVS particles and complete vaccine groups. In addition, more studies will be needed to optimize VLP vaccines as an alternative treatment for new viruses. This study was financed by Butantan Foundation and the São Paulo Research Foundation (FAPESP), Brasil. Process Number 2021/11946-9, 2024/06260-9.

Biography

Veterinarian. Master's degree in Experimental Pathology. She worked as Technical Manager of the conventional rodent breeding and animal experimentation vivariums at UNESP- Pharmaceutical Sciences. PhD Researcher in the Biosciences and Biotechnology Applied to Pharmacy program, focusing on Microbiology, Molecular Biology, Genetic Engineering and Cell Culture. She is currently a Postdoctoral Fellow in Preclinical Studies in the Development of Vaccines and Immunologicals at the Butantan Institute.

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