

VAC_15 - Immunogenicity analysis of sarscov2 viral particles inactivated with β -propiolactone or high hydrostatic pressure *in vivo*

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Introduction: The SARS-CoV2 that causes COVID-19, belonging to the Coronaviridae family, is an enveloped virus that does not present its genetic material a positive sense RNA. SARS-CoV2 infection causes severe symptoms, and in view of this, several types of vaccines were presented during the last pandemic. However, the effectiveness of available vaccine platforms is reduced due to circulating virus variants, making the scenario more complex. Thus, it is necessary to search for new, more effective and accessible vaccine alternatives to combat all variants.

Objectives: Our work analyzes the immunogenic effect of SARS-CoV2 particles when chemically inactivated with β -propiolactone (β PL) or by high hydrostatic pressure (APH) in murine model.

Methodology: The SARSCOV2 virus was inactivated by different methods (chemical and physical). Then, BALB/c mice were immunized with the vaccine formulations (3 doses - 14 days interval between doses). Data were obtained through ELISA, microPRNT and flow cytometry assays.

Results: The results of the hydrostatic pressure inactivation tests showed that the SARS-CoV2 virus is inactivated when subjected to a pressure of 42k psi for 3 hours and images emitted by transmitted transmission electron microscopy that both forms of inactivation preserved the spicules around the viral particle after inactivation, suggesting preservation of the Spike protein. In the *in vivo* immunogenicity assays, BALB/c mice (CEUA 086/20) were used, the expected results that animals immunized with β PL that received the antigen alone or combined with the adjuvants Scalene, Allum, CpG, MPL and Poly IC had greater production of IgG with neutralizing capacity when Scalene and CpG were combined. On the other hand, animals immunized with the virus inactivated by APH revealed that the intramuscular route is more efficient for the production of neutralizing agents when the antigen was inoculated alone, as well as when combined with Scalene.

Conclusion: Although new experiments are needed, our results indicate that there was a humoral immune response in the different forms of inactivation and that the intramuscular route is more efficient than the others.

Keywords: vaccine, SARS-CoV2, High Hydrostatic Pressure