INTRADERMAL VACCINATION WITH A CHIMERIC VACCINE TRIGGER POTENT HUMORAL AND CELLULAR IMMUNE RESPONSES AGAINST VISCERAL LEISHMANIASIS

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Canine visceral leishmaniasis (CVL) is considered a significant public health issue that is difficult to control due to the high prevalence of asymptomatic infected dogs and its expansion in Brazilian urban centers. Additionally, there is currently no licensed vaccine for visceral leishmaniasis in humans and the only available veterinary vaccine licensed in Europe is considered unsuitable for use in humans. Thus, developing an immunogenic, effective, and safe vaccine for prophylactic use is essential as an alternative for disease control. Therefore, we aimed to evaluate the immunogenicity of a chimeric vaccine adjuvanted with Hiltonol (ChiA/Hiltonol) as a candidate against VL. BALB/c mice received three doses intradermally of ChiA/Hiltonol using microneedles, with 15-day intervals between doses. Humoral (IgG, IgG1, and IgG2a) and cellular (cytokines-producing T cells) responses were assessed 15 days after the third immunization. We observed an increase of serum immunoglobulins IgG and IgG1 subclass anti-ChiA following vaccination with both ChiA and ChiA/Hiltonol. Moreover, ChiA/Hiltonol also triggered the IgG2a subclass production, suggestive of a balanced T_H1/T_H2 response. ChiA/Hiltonol vaccination led to increased IL-2, TNF, and IFN-γ-producing $CD4^+CD44^+$ and $CD8^+CD44^+$ T cells. It is known that IgG subclass switches are regulated by interaction with CD4 T cells. In mice, a T_H1-associated cytokine such as IFN-γ influences IgG2a subclass secretion. Spearman's *r* test reveals a strong positive correlation between IgG2a production and the percentage of IFN-γ-producing $CD4^+CD44^+$ T cells, suggesting that class switch is highly related to vaccination regimen with Chi-A/Poly ICLC. Our findings highlight the potential of the chimeric vaccine adjuvanted with the Hiltonol to induce protective immunity, with emphasis on the production of pro-inflammatory cytokines, TNF and IFN-γ, and IgG2a subclass.

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